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The
**NORTH CAROLINA
MEDICAL JOURNAL**



Best Wishes for 1941

Vol. 2

January, 1941

No. 1

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Petrolagar*...for the *Treatment of Constipation*



• Petrolagar Plain, is a bland emulsion of high grade mineral oil. It helps to soften the feces and promotes the formation of an easily passed stool.

Petrolagar Plain helps maintain regular bowel movement without the use of harsh laxatives.

Suggested dosage:

Adults—Tablespoonful morning and night as required

Children—Teaspoonful once or twice daily as required



*Petrolagar—The trademark of Petrolagar Laboratories, Inc., brand emulsion of mineral oil . . . Liquid petrolatum 65 cc. emulsified with 0.4 gm. agar in menstruum to make 100 cc.

NORTH CAROLINA MEDICAL JOURNAL

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No. 1

PHYSIOTHERAPY IN OPHTHALMOLOGY

WM. THORNWALL DAVIS, M. D.

WASHINGTON, D. C.

The Thermophore (Shahan)

This appliance permits graduated heat to be applied to the eye or adnexa. This locally alters the tissue metabolism with beneficial results in many disease conditions. It may also be used for cauterizing or sub-cauterizing in a particular manner. We consider this appliance to be one of our most valuable agents in the treatment of certain local inflammations of the eye.

Corneal Infiltrates: Such infiltrates are found in phlyctenular keratitis or keratoconjunctivitis, in tuberculous uveitis or tuberculous scleritis. Corneal infiltrates are often seen in the aged, who undoubtedly suffer from food deficiency conditions which are often manifested by eye complications early in the disease. It is noted more frequently in those suffering from the *debility* of age. Since they cannot get outside, particularly in winter, the vitamins and other necessary ingredients of their diet, though present in the food, are not assimilated or used in the body metabolism. One observes this same condition in many city dwellers who get no exercise in the sun and open air.

If you will permit me to digress for a moment, I would like to stress the importance of good food properly prepared so that its vital constituent may not be destroyed. Vegetables should be *fresh*, and so cooked that their salts are not thrown away in the water.

As a nation we are suffering from malnutrition, not because of insufficient food but because of a lack of intelligent interest in acquisition and preparation.

Frequently hotels and restaurants, where so many obtain their food, purchase old food—fruits and vegetables which have lost most of their vital constituents. What they have left are destroyed by the steam tables. Hence, when the vegetables reach the table they are scarcely more than cellulose. The food is also much too rich.

The fruits and melons are likewise deficient in the vital principles because they are picked green. The citrus fruits in particular may be mentioned as an example of this.

Our national habits of life further devitalize us. These habits extend from the time the child enters school until he completes his education. He is kept in school too long, and given too much work for his immature mind. He is not taught by the precept or example of his teachers the necessity for regular daily out-of-door exercise. A growing lad or girl should have ten hours' rest in bed. Few, indeed, get it! During adolescence, they begin to feel the need of stimulants and to use them.

The routine in college is still worse. The exercise prescribed is a minimum. Those physically fit are overtrained for purposes purely selfish on the part of the institution.

Not having been taught during their school and college days the value of sane and proper living, young business and professional men continue the same bad habits they followed in school. The results are frequently early degenerative changes, particularly of the cardiovascular system, the kidneys, liver, pancreas and other vital structures. They come to the ophthalmologist with headaches, asthenopia, early failing accommodation, and disturbances of the motor apparatus—particularly of convergence and divergence. They suffer from deficiency syn-

From the Department of Ophthalmology, The George Washington University School of Medicine, Washington, D. C. Read before the North Carolina Eye, Ear, Nose and Throat Society, Winston-Salem, September 26, 1940.

dromes, and involvement of the cornea and sclerocornea may result. When the metabolism is disturbed by long continued faulty habits, it is difficult or impossible for us to obtain a cure. Structural changes of the tissues have occurred and these often are too far advanced to permit repair.

At the same time we undertake the local treatment of the various lesions of the eye, we must go over the history of the patient most fully and carefully, inquiring into his life *habits* as well as his medical and family history. We must consider an eye lesion as a local manifestation of constitutional disease—or, more probably, a metabolic disorder.

We have laid too great emphasis upon focal infection in such conditions. I do not wish to minimize the necessity of seeking such foci and eliminating them, but we must consider the *cause* of the infectious foci. There are undoubtedly a great many purely local infections. However, a high state of resistance induced by proper food, rest, exercise and controlled appetites minimizes focal infections, while converse conditions tend to invite them. To consider such matters in conjunction with local treatment distinguishes the medical doctor from the irregular practitioner in ophthalmology.

Corneal ulcers which result from the infiltrates before mentioned and ulcers resulting from other causes are amenable to treatment by the thermophore. The temperature and length of application vary rather considerably in the opinion of various surgeons. We use it on corneal infiltrates from 110 to 120 F. for thirty to sixty seconds, with the larger applicators. We seek to treat not only the actual area involved, but as much of the corneal area about it as may be reached by the applicator. This we feel is advantageous to the metabolism of the corneal tissues. For this reason too high temperatures or too long applications should not be used. Our purpose is to stimulate tissue and not devitalize or destroy it. For ulcers we use about the same temperature, or 160 F. for fifteen to thirty seconds. It is our habit to begin the treatment with lower temperatures and shorter applications until the individual reaction is ascertained. Considerable unnecessary suffering may thus be avoided, and we may form an opinion as to the temperature which may be used without injury to the tissues.

The same methods are used in scleritis, sclerokeratitis and tenonitis. We have found

it particularly valuable in tenonitis, which yields with greater rapidity to this than to any treatment that we have tried. As a cauterizing agent in the palpebral form of vernal catarrh it has been used to advantage.

I would like to describe a disease entity which has been described only by Vogt, and then very briefly as an isolated case. This I have termed superficial punctate parenchymatous keratitis. It is characterized by redness of the eye which may closely simulate conjunctivitis and is usually mistaken for it. Symptoms of eye irritation are sometimes very marked. The patient may be awakened in the early hours of the morning by a feeling as if a very sharp and cutting foreign body were in the eye, associated with a flow of tears and a great discomfort. The eye is quite red. The attacks occur at irregular intervals and last over a long period. In the intervals between attacks the eye may be only slightly red, or perhaps not at all discolored.

The characteristic lesions are fine, white flecks in the cornea which can be seen only with the slit lamp using the high power. They are immediately beneath the epithelium and stain green with fluorescein. This condition is not uncommon. We have had 197 cases since 1922.

Several marked and chronic cases of blepharospasm, both tonic and clonic have been found to be due to this condition! These cases had been carefully studied by competent men in medicine, neurology and ophthalmology, and no cause had been found for the incapacitating blepharospasm. They were cured by the thermophore. We consider this the most brilliant performance of the thermophore in our hands.

The use of this instrument for the treatment of glaucoma has been advocated. We have had no experience with it in this disease. It is used with the tip placed over the ciliary body, the theory being that by lessening the activity of this structure the secretion of the aqueous is lessened and the pressure within the globe reduced.

High Frequency Currents Used in Medicine

1. Diathermy (high frequency): a million oscillations per second.
2. Radiotherapy (very high frequency): ten to a hundred million alternations per second.
3. The Electric Knife.

When *low frequency* currents are passed through the tissues of the living human body the electrolytic ions move to and fro with the alternations. There results polarization of the cells, nerve stimulation and muscular contraction.

With *high frequency* the ions have less time to move and heat is generated in the tissues. The absence of nerve stimulation and destructive electrolysis permits large currents to be passed through the body without harm and with consequent increase in heating effect. In the light of our present knowledge it may be said that the only effect of diathermy is the production of heat in the tissues. There are no specific effects so far as is known.

Damped and Undamped Currents: When a condenser or Leyden Jar is discharged through a spark gap the current surges back and forth like the oscillations of a pendulum. As the pendulum stops swinging after a push, so the electric oscillations die down—that is, they are “damped”. The condenser may be repeatedly recharged and allowed to discharge, producing a series of damped trains of oscillations. This has been the method of generating the oscillating currents in radio, telegraphy, diathermy machines, etc.

The thermionic vacuum tube has provided a means for exciting continuous oscillations. The tube consequently has supplanted the spark gap radio transmitter and diathermy machine.

The damped current produces a much higher voltage, which favors the production of sparks and burns. The undamped current is smooth, steady and continuous, and has a minimum tendency to sparking.

The large electrodes produce heating of the deeper tissues with a minimum danger of burns. This heating, it should be remembered, has a selective action on the tissues, depending upon their resistance; for example, fatty tissue is heated less than vascular tissues.

This selective action is not too well understood; hence, selection of the current necessary to heat certain tissues is, so far as I am aware, scarcely practicable at this time.

The diathermy knife should not, in my opinion, be used about the eye. We have seen two eyes lost from corneal destruction with an anterior uveitis as a result of the use of the diathermy knife for removing

chalazia. There was continuous exfoliation of the corneal epithelium, deep keratitis and anterior uveitis, all of low-grade and chronic progress, with final opacification of the cornea and shrinking of the globe.

We considered carefully the use of diathermy in ophthalmology, and decided to try it in those cases in which the vascular supply in the retina and choroid was inadequate—in sclerosis of the retinal vessels or of the choroidal vessels from any cause. We felt that it might be of particular use in elderly people with senescent sclerosis of the retina and choroid. These patients complain of inability to use their eyes with comfort. They can read only a short time before they suffer discomfort which may be mild or severe. Their vision dims after half an hour's reading. Since the elderly have little to occupy them, in many cases they read a great deal if they can. It is a tragedy to them and to their families when they can no longer read efficiently. We have tried diathermy upon these cases, but there remains a question in our mind as to how much good it has done. Quite a few appeared to be helped, though we could distinguish no change in the appearance of the vascular structures of the retina or choroid. Thus we were not sure whether the improvement was due to mental suggestion or to physical changes.

Great care is required in its use. We never felt quite safe with it for two reasons: First, because of the effect it might have upon the retina, particularly the macula; second, because of the danger of burns. With the greatest care we had one rather bad burn of the lid, which fortunately healed without scarring.

Theoretically, diathermy should be of value in the type of case above described. We believe it has value, yet we hesitate to recommend it on account of the possible dangers. “If you do no good, be sure you do no harm.”

Detached Retina and the Use of Short Wave Therapy: We used at first the diathermy needles, and of late the Lacarrare apparatus, which is much simpler and, we think, more efficient. Our results have been about the average. We have taken on all cases which we felt had a chance of cure, and have not attempted to have a high percentage of cures by limiting our surgery to selected cases.

Our method is to study carefully the fundus with a widely dilated pupil, making a drawing of the detachment. Disinsertion,

tears or holes of the retina are searched for with extreme care and shown on the drawing in red and in proper position to the meridians and longitudes upon the sclera. The more accurately this is done the more successful will be our results. The fault or faults in the retina should be carefully isolated by a barrage of sclerochoroidal punctures. The detachment should be outlined by a like barrage. Such lines of barrage should be longitudinally crossed in several places by a like barrage.

Good drainage of the subretinal fluid should be secured. This, we feel, is of the greatest importance. It is best not to be too precipitate in operating upon a detached retina. We have had two cases in which spontaneous reattachment and healing have taken place. These cases have been under observation for twelve and eighteen years respectively. They were both peripheral detachments in middle aged, healthy people in active professional life.

It is our opinion that the technique of the operation is within reach of any qualified ophthalmic surgeon. Careful study of the literature is necessary in order to become familiar with the methods of localizing the disinsertion, the tears and holes in the retina, and of outlining the detachment with subsequent projection of these faults upon the exterior of the globe. This is not very difficult, but requires careful study.

Dr. Lawrence Post and others have used the Shahan thermophore in selected cases with success. The method appeals to us, but we have not had experience with it as yet.

Phototherapy

General: The use of a large mercury vapor or carbon arc is the best for this purpose. Its use is indicated in disordered metabolism due to deficient diet and lack of exposure to the sun. When this is impossible, the sun lamp is of value. In the aged and infirm it may be of great value. In both cases calcium and vitamin D in connection with exposure to the lamp may be advantageous.

One third of the body is exposed at a sitting, the dose being a slight skin erythema.

Tuberculous lesions of the eye obviously should be treated in conjunction with other measures already suggested. This refers to tuberculous uveitis, anterior or posterior. Phlyctenular conjunctivitis of probable tuberculous origin should be so treated. In our experience, however, many cases of phlyctenular keratitis and conjunctivitis are

due to dietary deficiencies, particularly to the abuse of sugars and sweets of various kinds, especially by children.

Children are often not taught to eat properly. They frequently will not eat breakfast; at school they become hungry before the luncheon hour and buy the cheapest and most undesirable kind of candy and cakes. This destroys their appetite for lunch. The same thing happens in the mid-afternoon—more candy and then no appetite for dinner. After a month or more of this kind of thing the body metabolism is badly upset. Such a condition is not quickly amenable to correction. It may take months to accomplish it. Drugs will be of little help. Proper food, including milk, regular out-of-doors exercise, *sunshine*, and proper hygiene, will finally restore the child to health. We have found that the syrup of iodide of iron is helpful.

Local: A decade ago this treatment was considered of great value, and much was written upon it. We have always felt some doubt as to its efficacy, and have ceased using it. We always had a certain fear of the late effects upon the lens and possibly the retina, the macula in particular.

Thermal Therapy

Local heat: The use of this is so well known that it scarcely needs comment. It has great value in relieving pain in acute inflammatory conditions of the eye and adnexa, in iritis, acute glaucoma, uveitis, hordeola, acute chalazia, lachrymal gland or sac infections, etc.

Some individuals react badly to the use of local heat and are made worse. An acute neuralgia may be precipitated in certain individuals. In those with delicate skins an acute dermatitis may be set up which is difficult to control, and in the debilitated may be worse than the original condition. The dermatitis may cause a spastic entropion which may greatly aggravate the situation, and in the end might be of serious consequence.

Cold may act in a similar manner on the skin, and care in its use should be exercised, especially in the aged, particularly in regards to the cornea. The use of cold is not without danger. We have found it of use in vernal catarrh and allergic conjunctivitis. The latter is particularly amenable to cold. The use of holocain and adrenalin in conjunction with the cold will control the paroxysms of itching which are so distressing to the patient. The late Dr. de Schweinitz

many years ago directed our attention to holocain for such purposes on account of its curative as well as its anesthetic properties. Gifford⁽¹⁾ speaks of the use of cold following muscle operations upon the eye.

Infra-red rays: This gives a deeper heat and a dry heat, and has its place in our armamentarium. It is nothing more than heat, and no occult powers should be ascribed to it. It should not be used where the danger of hemorrhage is present, in conditions such as *acute glaucoma* and *conjunctivitis*.

Short wave diathermy: There is no question of the value of fever induced by means of Kettering's hypertherm. It is dangerous, and should be used only by those trained and experienced in its operation. An electrocardiogram and thorough physical examination should be required before the patient is subjected to the treatment. In an hour or less after the patient has been placed in the chamber the temperature may be increased to 40.5 C. It can be brought back to normal in from thirty to forty minutes. The chamber is a hot air cabinet in which the temperature and humidity can be controlled.

A temperature of 106 to 108 F. is sought, and the fever is continued for from five to eight hours. It is essential that the patient take salt and 5 to 8 liters of fluids during this period. Chronic and acute exudative uveitis and iritis, interstitial keratitis, syphilitic atrophy of the optic nerve and other low grade inflammations of the ocular apparatus respond best to its effects. Benedict says the method is of particular value in conditions accompanied by cellular infiltration such as uveitis, acute, subacute, or chronic, and particularly in scleritis and exudative choroiditis. It is particularly valuable in gonorrheal conjunctivitis.

McGavic⁽²⁾ says that more experience and study is necessary before we may draw definite conclusions concerning its relative value, its indications and the number and frequency of the treatments desirable. He feels that corneal ulcer, phlyctenular conjunctivitis and metastatic meningococcic endophthalmitis are much benefited by this treatment.

Accessory treatment, particularly in syphilis, must be used. This is particularly true in syphilis of the nervous system, where the fever therapy is accessory to the treatment by the organic arsenicals and mercury.

Radium and Roentgen Therapy: In new growths in the lids or contiguous skin surfaces radiation is most valuable—also in the cornea, sclera or conjunctiva. Recurrent pterygia yield most satisfactorily to radiation. In our experience this condition can not be diagnosed until after it *has* recurred, although one may suspect it when the growth is very succulent and thick. The recurrence is usually very prompt, the growth reappearing within a few weeks. It is vascular, succulent and thick, and spreads with rapidity. Prompt treatment is desirable.

In vernal catarrh where there is marked involvement of the palpebral conjunctiva irradiation is satisfactory. When the growth involves the circumcorneal region it is likewise of value. In the cases with severe paroxysms of itching, small dosages often repeated are of value, according to Gifford⁽¹⁾.

This subject should not be dismissed without mentioning the possible dangers of these powerful and potentially destructive agents. The greatest danger lies in long deferred opacification of the crystalline lens. We have seen cataracts occur several years after exposure to x-ray or radium. Because of this danger we do not use irradiation about the eyes except in malignant or potentially malignant disease.

Massage

This is a valuable measure when skillfully done, and is helpful in many conditions. The eye symptoms in aged patients are often due, in part at least, to deficient circulation resulting from senescent arteriosclerosis. Skillful massage seems indicated and is helpful. No doubt the mental suggestion is also a factor. In certain cases of neuralgia it may be of help, but it is possible to aggravate the neuralgia.

We believe it to be of real value in chronic glaucoma and in the less severe attacks of congestive glaucoma, in conjunction, of course, with the usual treatment of this complicated disease.

Following filtering operations, particularly iris inclusion operations, it is essential to success. We feel that it is not employed as universally as it should be.

Orthoptic Training

This is one of the most valuable physiotherapeutical agents which we have employed in recent decades. We have said that "it does not cure squint, but squint cannot be cured without it." We are not yet aware of

1. Gifford, Sanford R.: Physical Therapy in Ophthalmologic Practice, Arch. Ophth. 19:171-180, February, 1938.

2. McGavic, John: Fever Therapy for Ocular Diseases, Arch. Ophth. 19:769-793, May, 1938.

the cause of squint, but in the vast majority of cases it is accompanied by deficiencies of fusion. Whether this be a cause or an effect need not be discussed here; what is obvious is that unless this defect be remedied there is deficient binocular vision or monocular vision only. Conditions today call for efficient vision more than ever before. The individual without efficient binocular vision is handicapped. Therefore we feel that orthoptic training is essential in the treatment of strabismus.

It should be begun as soon as the child is sufficiently mature to cooperate with the technician. The technician must be honest and intelligent, and must possess an understanding of childhood. The ophthalmic surgeon must be well informed upon the subject and the parents and child intelligent and cooperative. Have we not this combination, the probabilities of success are lessened.

In this connection we may discuss briefly accommodative convergent squint. This form of squint is due entirely to an excess accommodation causing an excessive convergence. In such cases there is no other factor—no abnormal position of rest or abnormal muscle—no factor x, as we term it. This factor x means a mechanical factor of some kind.

Obviously the diagnosis is necessary before treatment can begin. Though the statement calls for many modifications and qualifications, one may somewhat arbitrarily say that if the squint is entirely corrected by glasses, it is an accommodative squint. Many such accommodative convergent squints may be cured by orthoptic training. In two years we have had 33 cases of purely accommodative squint with 12 cures. In many of the cases the child may be cured of the squint without wearing glasses. We consider this method of treatment to be one of the outstanding accomplishments in ophthalmology in the last decade.

Purely accommodative squint is infrequent; most cases have both an accommodative factor and a mechanical factor, or a complicating vertical anomaly. It is necessary to correct these cases by surgery or other means. Purely accommodative squints should *not* be operated upon. To do so will produce a divergent squint for distance and a convergent squint for near objects.

Refraction

Even though this comes within the subject of physiotherapy there is insufficient time to discuss it here. It is very important in

ophthalmology and is frequently not treated with the consideration it deserves.

Children should not be given glasses unless they require them. I would emphasize this statement. It appears to me that the general impression among many ophthalmologists is that all eyes having a refractive error should be corrected. In our opinion this is inadvisable. If the child's symptoms result from too long hours of study, insufficient exercise, or improper diet, we only add a further burden by putting glasses upon him that he does not really need. They may defeat the very objective we seek to attain. The expense is a factor very often, and we should not impose this upon the family when attention to the hygiene of life will correct the symptoms. We deplore the attitude of many in our profession that all refractive errors require glasses. Herein lies one of the main differences between the ophthalmologists and the irregular practitioners. We should seek to obviate the necessity of wearing glasses. We are professional men and are not primarily interested in selling goods.

THE NUTRITION SURVEY

D. F. MILAM, M. D.

*State Board of Health and
International Health Division, The
Roeefeller Foundation*

CHAPEL HILL

For a good many years the State Health Officer of North Carolina has stressed the basic necessity of nutrition improvement in any adequate program of public health administration. So many other public health problems have their foundations in the nutrition problem that it seemed illogical to concentrate on these rather than on the basic nutrition aspect. But the difficulty of approach to any solution of this problem—even to any adequate diagnosis of it—has discouraged the public health administrator from attacking it, in spite of the urgent need.

In the last five years, however, great advances have been made in the knowledge of the nutrition diseases, their cause and cure; and the hope has dawned that perhaps the time is now ripe to review this whole problem with the idea of doing something more definite about it. There are, for instance, the two facts about nicotinic acid that came

to light in the latter part of 1937: first, that nicotinic acid would cure black tongue in dogs⁽¹⁾, and, second, that it would cure pellagra in humans⁽²⁾. It is a blessing for the pellagrins that his dermatitis and his sore tongue and even his mental depression can be relieved within a few hours and cured in a few days by simply taking capsules of nicotinic acid; however, there are still borderline cases who go untreated, and patients suffering from several deficiencies at the same time whom nicotinic acid will not cure. A more basic attack on the food deficiency itself is necessary to solve the problem for them, and the cure is not a capsule but an adequate diet. Many pellagrins who formerly would have been considered typical cases have been shown to have some symptoms that are not improved by nicotinic acid. These are logically considered to have a separate disease curable by entirely different substances.

With the stimulus of these and other new discoveries about the vitamins, the public health administrator has begun to plan how he may apply the new knowledge to the problem of defective nutrition. Poverty and ignorance are constant companions; and defective nutrition seems to be an adjunct of both. To attack any one of these three is to attack all. Therefore the state health officer has begun to formulate a program for nutrition improvement which will embody a health program, a program against poverty and malnutrition, and an educational program that will drive home the knowledge that a varied diet containing all the essential food items is basic for optimum health.

In outlining such a program for nutrition improvement, it was natural to utilize experience gained in other control programs. The methods of attack on each of the great public health problems are similar. In tuberculosis the case finding program is the center of the plan, as it is in syphilis, malaria or hookworm control. The diagnostic method is the first concern of the one responsible for any control program. For a widespread disease such as malaria or hookworm, this takes the form of a survey, which attempts to examine every individual in a selected area or areas to determine the extent and intensity of infection. Only when this has been done is a program of control applied, and

the results achieved are measured against the base line of this first survey.

A similar method seemed indicated in the nutrition program. It is first necessary to know the extent of the problem one is attacking. How many people are suffering from malnutrition? How severe is it? How many have actual deficiency disease and how many are borderline or subclinical cases? An answer to these questions is essential before a well grounded program of control can be put into operation.

A survey has been devised in North Carolina which seeks to answer some of these questions. The first concern was to choose the diagnostic methods to be followed in securing this information. As regards diagnosis in malnutrition, the technique is by no means as simple as it is in the other great public health problems. In malaria and hookworm a simple microscopic examination is relied on to diagnose the disease. In tuberculosis the case finding is a bit more complex. But there is, up to the present time, no simple or single method that can be relied on to certainly diagnose malnutrition. Many conditions other than lack of food essentials will cause conditions or symptoms which might be laid to deficiency in intake. In studying malnutrition it is necessary to regard the individual as a whole; and before a diagnosis is made all other possible causes must be ruled out. The nutrition survey therefore becomes very complex, and to be thorough and reliable the small intensive survey rather than a wide diffuse one is indicated.

Methods

There are several approaches. The original method so widely used in the nineteenth century, and still a valued background for any procedure, is the food intake survey, done by the questionnaire, or on smaller groups by the more accurate weighing procedure. The dietary of the American people was closely studied by Atwater⁽³⁾, and norms were set up for total calories, carbohydrates, protein, fat, and mineral salts intake. This quantitative method is still valuable, in spite of its inaccuracies. But with the newer knowledge about vitamins the qualitative element has taken precedence and food surveys have become more detailed.

The medical history and physical examination have also been used from the start in

1. Elvehjem et al., in *J. Am. Chem. Soc.* 59:1767-1768, 1937.

2. Smith, Ruffin, and Smith: Pellagra Successfully Cured with Nicotinic Acid, *J. A. M. A.* 109:2054-2055, 1937.

3. Atwater: Annual Report, Conn. Agric. Exp. Sta. 4:106-161, 1891.

nutrition surveys. It is now accepted that a thorough physical examination is necessary before the complete picture is possible as to the nutritional status of any individual. The casual inspection for physique and pallor plus weighing and measuring is no longer considered an adequate investigation for this purpose. Since every morbid condition has an effect on nutrition, it is manifestly unscientific to attribute malnutrition to improper food until the presence or absence of such pathologic conditions has been investigated.

In addition to these two time-honored methods for assessment of nutritional status, there has been a continued attempt to put this procedure on a more objective basis. The following procedures have been introduced and each has its enthusiastic advocates.

Anthropometric measurements: Height, weight and width, chest depth, chest width, arm girth, thickness of subcutaneous fat, shoulder breadth, hip width, chest circumference, arm length and other measurements have all been said to be affected by diet and, therefore, have been suggested as criteria of nutritional status. Altogether nearly 30 such measurements have been suggested. The ideal would be for some one of them to answer the whole question as to the nutritional state of the individual being tested. That ideal has not been attained, nor has any combination of these tests proved adequate for that purpose.

Two interesting variants of these anthropometric measurements are what have been called slump and plantar contact. By slump is meant the ratio of standing height to height measured while lying on the back. There is a definite slump in height when the erect posture is assumed, and it has been claimed that the amount of this is an index of nutritional status. In the same way a comparison of plantar area in contact with the floor while sitting with the area in contact while standing has been used. Too many other factors will influence these two indexes for any complete reliance to be placed on small variations as indicative of inadequate nutrition.

Of more definite nutritional significance is the measurement of the skeletal status. The developmental age of a child can be definitely determined by comparing x-rays of the ankle, hip, wrist or other joints with normals for the various ages. The late Wingate Todd⁽⁴⁾

gave precision to this method of work. But of equal importance for determination of nutritional status is the measurement of the degree of mineralization of the bones. Involved in this physiological process are at least three food essentials—calcium, phosphorus and vitamin D. And so in a nutrition survey an x-ray of one or more joints is made on each individual, using a lead grill record on each film. This latter makes possible the comparison of all these pictures with the normal and with each other as to the density of bone. By the use of a photoelectric densitometer this measurement can be placed on an entirely objective basis. That demineralization occurs in certain diseases and certain types of malnutrition is well recognized. In the nutrition survey it is hoped that the method will be of value in determining deficiencies in the food elements responsible for bone density.

In addition to the x-ray picture three other laboratory procedures are of value in this determination of skeletal status. These are the blood tests for calcium, phosphorus and phosphatase. The phosphatase test in particular has been found of great value in determining early rickets; and the blood phosphatase in acute rickets is many times the normal level. If this test proves to be of similar value in determining lesser degrees of food deficiency leading to conditions short of actual rickets, it will be very useful in nutrition surveys.

The condition of the teeth has also been used as an index of the nutritional status of an individual, but recent observation has shown that it is not possible to state certainly that caries and cavities are invariable indications of deficient intake of mineral salts and vitamins. That there is a direct relation between teeth and diet seems evident, but so many other conditions enter in that extreme caution is necessary in drawing conclusions. A careful examination of the teeth and gums is part of every physical examination.

Basal metabolism determination as a diagnostic method in nutrition surveys is chiefly useful for excluding individuals of obviously abnormal metabolism. Of much more value is the test for determining the protein content of the blood plasma. Nutritional edema has been established as a disease resulting from inadequate protein intake. In this dis-

1. Todd, Wingate: Nutrition: The Newer Diagnostic Methods, pp. 9-31. Annual Conference, The Milbank Memorial Fund, 1938.

ease the total proteins of the blood are lowered and the albumin-globulin ratio falls. If such findings, though in lesser degree, characterize the protein pre-deficiency state it will be a valuable indicator of nutritional deficiency in the pre-clinical stage. This relation is not yet established, but inclusion of the test in nutrition surveys seems clearly indicated at the present time.

Knowledge of the hemoglobin level is, of course, basic to any study of nutrition. Nutritional anemia is probably the most widespread of all deficiency conditions, its degree varying with the iron deficiency of the food intake. When other causes of anemia are ruled out, the hemoglobin level is a valuable indicator of the nutritional status of an individual. Three measurements—namely, the red cell count, the hematocrit and the hemoglobin determination—make possible the calculation of all the indexes on which diagnosis of the type of anemia is made.

Of more recent development are the tests that determine the level of vitamins in the blood plasma. The urinary tests are considered unsuited to survey procedures. Such blood tests are best done now with regard to vitamin C, and tentative levels for vitamin C in the normal individual have been proposed. The quantity of vitamin C found in the blood of a normal individual is about one part per 100,000. The exact significance of levels lower than those proposed as normal has not yet been established. Some individuals with no detectable vitamin C in the blood show no symptoms attributable to this lack. It is fair to assume that a certain level is necessary for the best of health.

A test for vitamin A is much less satisfactory. The body stores vitamin A in the liver, and when there is a deficiency in the intake of vitamin A, this store is given up most parsimoniously and over a long period. Therefore it takes a considerable period of time for deficiency in vitamin A intake to show up in patent symptoms. A method is at hand for extracting vitamin A in blood plasma and determining its quantity by the colorimeter. The significance of a low level found on a single examination in any one individual is yet to be determined.

Another test proposed for vitamin A pre-deficiency has been the test for visual acuity by the several photometric methods, the most recent and accurate of which is the adaptometer method of Hecht⁽⁵⁾. It was shown by

the studies of Wald⁽⁶⁾ that visual purple is partly composed of vitamin A, and that when it is bleached by light its regeneration depends on an adequate supply of vitamin A. The adaptometer of Hecht makes use of this principle, and by an ingenious device for changing the intensity of lights, it determines the interval of time necessary for the individual to regain normal vision after the bleaching with intense light. The use of this machine to determine deficiency in vitamin A intake was begun with enthusiasm, but at the present time its failure to show low thresholds of light vision in individuals obviously deficient in vitamin A intake has thrown doubt on its value.

Blood tests for vitamin B₁, or thiamin, the anti-beriberi vitamin, are being carried out in certain studies^(7, 8), but so far are too complicated and indefinite to be of practical value.

Of utmost importance in surveys in this region is a test for nicotinic acid in the blood. Unfortunately, a test specific for nicotinic acid is not yet available.

The value of riboflavin, another component of the B₂ complex, in human nutrition has been established, and apparently its deficiency syndrome has been considered part of the pellagra symptomatology, until separated recently by Sebrell⁽⁹⁾. At least two methods of testing for this substance are available: one a bacterial growth test method using an acidophilic bacterium; and the other an acid titration method. Both of these methods are being studied for possible inclusion in nutrition surveys.

The North Carolina Survey

In setting up a nutrition survey in North Carolina the foregoing information was studied critically with the idea of including in the survey all methods that seemed valuable and practical. It was apparent from the start that the type of laboratory work necessary was so specialized that it was beyond the scope of work usually undertaken in public health laboratories. A natural suggestion was that the proper place for this biochemical work was a university medical school, where trained biochemists and physicians would be available to work on its problems. The State Board of Health and

6. Wald, G.: Carotenoids and the Visual Cycle, *J. Gen. Physiol.* 19:351, 1936.

7. Dixon: *Nanometric Methods*, Cambridge, England, 1934.

8. Hennessy and Cerecedo, in *J. Am. Chem. Soc.* 61:179, 1939.

9. Sebrell and Butler: Riboflavin Deficiency in Man, *U. S. P. H. S. Reports*, 53:2282-2284, 1938.

5. Hecht, S.: The Relation Between Vitamin A and Dark Adaptation, *J. A. M. A.* 112:1910-1916, 1939.

Duke University Medical School, with assistance from the Rockefeller Foundation, are cooperating in this nutrition study. The laboratory work is all done at the hospital laboratory. A small committee of four was set up to outline procedures and to review critically the methods used, with the idea of changing them when changes seemed indicated by newer knowledge in this rapidly developing science. After due consideration this committee picked the following items as the basis for the first nutrition survey:

1. Food intake survey for a 7-day period for each individual.
2. Medical history and physical examination.
3. Laboratory examinations as follows: red cell count and volume, and determinations of hemoglobin, total proteins, albumin, phosphorus, phosphatase, vitamin A and vitamin C. All the tests are done on blood.
4. X-ray of the wrist and ankle.
5. Adaptometer test for visual acuity.

It was evident that a great amount of work would be involved in the examination of every individual and that a survey of an extensive group would be out of the question. It was, therefore, decided that the best procedure would be to choose a small, rural community with or without some industrial element, and to survey such a community as completely as the cooperation of the inhabitants would permit. In the light of information obtained from this first survey, methods could be improved and modified before a second area of a somewhat different type was undertaken. It seemed probable that by taking single communities conclusions could be drawn as to the nutritional status of such communities over large areas, and that procedures to ameliorate conditions found could be based on results obtained. With this end in view a nutrition study was organized January 1, 1940, with the three cooperating agencies, and a survey was begun in a small, rural community.

To give point to the whole procedure and to plan for carrying out any program that might arise from the nutrition study, a committee was organized which is to have general supervision of the nutrition study, to outline the main objectives and to elaborate a plan for applying the results of the present study, and to enlist the support of those agencies which must be relied on to carry it out. This committee has already had its

first meeting with one or more representatives from the State Departments of Health, Education, Agriculture, Welfare; Duke University; the University of North Carolina; the Woman's College of the University of North Carolina; and the North Carolina State Medical Society. Active cooperation has been assured from each of these groups.

In the first community selected for survey a mass of interesting data is being collected. It is hoped that this can be presented to this group at a later meeting.

Summary

The background of the nutrition problem is discussed and the reasons for the North Carolina nutrition study and the methods of setting it up are given. Possible survey methods are discussed and the ones chosen for the North Carolina study are listed.

Abstract of Discussion

Dr. Carl V. Reynolds (Raleigh): Dr. Milam has given us a dissertation on one of the most important programs in the field of preventive medicine.

That nutritional study, coupled with the school health program reaching 900,000 school children of our state, will undoubtedly be one of the greatest influences on the restoration of health and the prevention of disease.

We thought we were doing well when we were able to divide our foods into proteins, carbohydrates, fats, and minerals. We thought we were stepping high, wide and handsome when we then could calculate those foods into caloric values and measure by guess the amount that one should have.

That was pioneer work. As Dr. Milam pointed out, then we were looking at quantitative foods. Now we are looking at qualitative foods. We are searching now, not for the clinical case of malnutrition, but for the subclinical case. We are trying to establish a known quantity in the field before disease attacks us.

This study, made possible through the Rockefeller Foundation, and so well directed by Dr. Milam, is a step forward. I think he makes twelve tests on every case, with the help of the chemists, the biochemists, the physiologists at Duke University. They make a thorough, painstaking examination, including x-ray of the bones of the wrist and of the ankle, to detect early symptoms of disease before any clinical symptoms are manifested.

We have with us two gentlemen whom I would like to present. One of them was with us in our pioneer work in public health fields of North Carolina, and to that gentleman North Carolina owes a deep debt of gratitude. His pioneer efforts have made it possible for this gathering to be here today. That gentleman is Dr. W. S. Rankin.

The second gentleman is one whom you know as well as you do Dr. Rankin. He is internationally known. He is a North Carolinian, too. We are proud of him. He has done a great service for North Carolina and for the world by his usefulness in the Rockefeller Foundation. It is through his efforts that we have been able to put on this nutritional program. I want to give those of you who do not know him a personal introduction to Dr. John Farrell.

Chairman Richardson: We shall, of course, be extremely happy to have both Dr. Rankin and Dr. Farrell participate in this discussion.

Dr. Farrell: I am glad to be here. I am of North Carolina, and I come back on every occasion.

When the Rockefeller Foundation becomes interested in a problem which is new and complex and extremely difficult, its solution calls for the best of scientific talent and the best leadership in the field of public health, both at the state and the county level. Conditions favorable for the advancement of knowledge and for the development of successful demonstrations in a field of this character, which cannot be undertaken in every locality are here; and as knowledge becomes available the agencies with which to disseminate and apply that knowledge likewise are in this state, and they are cooperating to a degree that is extremely rare in other states of this Union.

The significance of this nutrition problem cannot be over-estimated. We know that an important feature in the treatment of tuberculosis—although there are new developments—has been a generous, well-balanced ration along with rest and housing. We know of its effectiveness in combatting a disease very prevalent throughout the state and throughout the South—pellagra; of the responsibility of these nutritional deficiencies for scurvy and rickets.

If a well-balanced ration is of curative value in dealing with these diseases, isn't it all the more valuable as a medium for the prevention of these diseases at the time when they are in the subclinical zone? It is to make possible the recognition of these deficiencies, before there is any serious impairment of health, that Dr. Milam and his colleagues, the faculty of Duke University, are working. I wish to pay tribute to them and to express thanks, because they have been doing for years some of the best original research work in the field of nutrition, and when Dr. Reynolds gave them the opportunity to share in this, with one accord, in the clinic, the pediatric, the biochemical and the physiological departments, everyone cooperated enthusiastically, without receiving a cent of compensation.

Dr. W. S. Rankin (Charlotte): I am deeply grateful for the very kind commendation of a health officer so advanced in his ideas, and at the same time so sound. I don't know when I have been so encouraged as I was on two recent visits to the State Department of Health, when Dr. Reynolds was kind enough to take me through the departments and to explain what was going on and what was contemplated.

I look forward, as do Dr. Reynolds and Dr. Farrell, and these men associated with Dr. Milam, to some real constructive and far-reaching work through this comprehensive program—this new approach to the problem of nutrition, which is so closely related to so very many public health problems.

Heredity. — Knowledge of the mechanisms of heredity has been developed entirely within the last forty years. Progress was slow at first but has become increasingly rapid until now we feel justified in predicting the conscious control of the evolution of plants, animals and even of man himself. Thus in addition to having more and better tools, man, five thousand years hence, may be a better creature physically, mentally and morally.—**Blakeslee, Albert F.:** *Science Five Thousand Years Hence*, *Science*, 92:388 (November 1) 1940.

THE MANAGEMENT OF DIABETIC COMA WITH LIMITED LABORATORY AID

O. NORRIS SMITH, M. D.

GREENSBORO

The present generation has seen the transformation of diabetes from a hopeless malady to a condition permitting a virtually normal existence. The public has not yet been taught that diabetes is compatible with normal life expectancy, with robust health, and with practically unrestricted activity; that of all chronic diseases, it is uniquely painless, clean, susceptible to treatment, and neither disfiguring nor contagious. Two prominent citizens of Greensboro have recently committed suicide soon after they learned that they had diabetes. Let this be a warning to each of us to approach the new diabetic with optimism.

Education of the diabetic patient in the understanding and management of his disease is the keystone of future normal health. Thorough study of diet will afford him considerable latitude in choosing proffered food. Bodily hygiene is important—especially the care of the feet beyond the age of 35. The diabetic must be particularly alert to avoid exposure to infections, and quick to treat even the simplest cold. He must understand that early degenerative changes are the price of laxness in his routine, and that ketosis and coma bring permanent additional damage to his pancreas. Whether he will exceed his normal life expectancy will depend chiefly upon his own understanding of and cooperation in the management of the disease.

About one in every fifty Americans will develop diabetes⁽¹⁾. It is equally frequent in both sexes until middle age, and thereafter appears more commonly in women, reaching a ratio of 2:1 at the age of 70⁽²⁾. Both in intelligence and economic resources, diabetics are distinctly above the average. The physician who is able to handle this disease will accumulate a group of particularly intelligent and desirable patients, and will derive peculiar satisfaction in combatting so dangerous an antagonist.

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

1. Joslin, E. P., Dublin, L. L., and Marks, H. H., in *Am J. M. Sc.* 187:433, 1934.
2. Duncan, G. G.: *Diabetes Mellitus and Obesity*, Philadelphia, Lea & Febiger, 1935.

Every diabetic is a potential victim of coma, usually through infection or carelessness. The premonitory signs are variable and usually insidious, appearing over a period of days. Especially significant are loss of appetite, malaise, nausea, vomiting, abdominal pain, restlessness, drowsiness and exhaustion. The full-blown picture will soon follow: "air-hunger" dyspnea, dehydration, tachycardia, soft eyeballs, fruity acetone breath and unconsciousness. It is important clinically that the unconscious patient with profuse sweating is *not* in diabetic coma.

The management of diabetic coma in teaching hospitals is routinely guided by elaborate and frequent biochemical tests, to afford the students a better understanding of the metabolic changes and the therapeutic regimen from hour to hour. Such patients are usually handled by a team of at least three physicians—a senior and junior intern in charge of treatment, and the laboratory intern to report frequent blood studies. It is unfortunate that such a system of training does not teach the physician that a simple test often can replace a complex analysis; that for example, in jaundice, the demonstration of bilirubin in the urine is indicative of a direct Van den Bergh reaction or that, in diabetic coma, glycosuria means a blood sugar exceeding 170 mg. per 100 cc., and indicates the need for further insulin therapy without additional glucose.

In the majority of our hospitals, we do not have the assistance of interns, nor can the patient afford the expense of frequent blood analyses, even if the technician is available. In short, such laboratory teamwork is impossible. It is my purpose to show that such tests are superfluous, and that one diabetes-minded physician with intelligent nursing assistance can practically equal the success of teaching institutions in handling this emergency. With experience, the physician will derive almost as much information from frequent urinalyses as from frequent blood sugar determinations. By neither method will he be able to predict with any accuracy the insulin requirements beyond the immediate dose.

Glycosuria normally appears when the blood sugar exceeds 170 mg. per 100 cc., and its disappearance means that the blood sugar has fallen below that level. Although there is a hazard of cystitis, a continuously draining indwelling catheter will furnish urine which reflects the blood sugar level with a lag

of only a few minutes—at least no greater than the time needed to determine the blood sugar level chemically. The method is of course dependent upon satisfactory renal output. One occasionally encounters anuria, but a recent paper⁽³⁾ reports good response of this complication to the intravenous administration of 500 cc. of hypertonic (5 per cent) saline solution, followed by double the usual fluid administration. The Sheftel Urine Test Kit marketed by the Eli Lilly Co. affords a simple, convenient and accurate means of measuring glycosuria up to 6 per cent. (The recently marketed Galatest powder reaches its maximal color change with 1 per cent glycosuria, and this does not afford adequate leeway in the recognition of rapidly falling glycosuria during the early treatment of coma.) With such a set-up to measure frequently the glycosuria, one may safely continue heavy insulin therapy until the glycosuria approaches the vanishing point before administering any additional glucose whatever.

By the time glycosuria is controlled, consciousness is returning or has returned, and the degree of acetonuria becomes the indicator for somewhat less intensive treatment with insulin, oral glucose and saline. During this period, though the patient may be able to void frequently, it must be remembered that such a specimen constitutes a mixed accumulation, and does not reflect the blood sugar level at the time of micturition. The indwelling catheter is preferably retained until acetonuria is pretty well controlled.

The lone physician who is called to treat a comatose patient, and finds heavy glycosuria and acetonuria in the urine should not abandon the patient to seek further laboratory confirmation by blood analyses. It is well to take a blood sample for subsequent study, but the first duty of the physician is to institute promptly and to maintain adequate treatment, and not to be distracted by laboratory tests of academic interest.

There are few emergencies in medicine to compare with diabetic coma; treatment must be prompt and heroic in order to avert disaster. Our most important weapons are insulin, saline and warmth, while stimulants, gastric lavage and a cleansing enema are valuable subsidiary measures. Alkalies and much glucose are rarely necessary, and are

3. Root, H. F., and Riseman, J. E. F., in J. A. M. A. 110: 1730, 1938.

TREATMENT OF DIABETIC COMA			WITH LIMITED LABORATORY AID		
REMARKS:	CLINICAL STATE	INSULIN	FLUIDS	DIET	LABORATORY
Diagnostic Confirmation by Stat Catheterization Warmth Look for Pus Stimulants P.R.N. Gavage (NAHCO ₃) Enema (Soap)	COMA Dehydration Tachycardia Air-Hunger Dry Skin Acetone Odor Soft Eyeballs	Average 210 U. Unmodified For C-V. Collapse Give 20 U. Intraven. Routinely Give (H) 50 U. Q. 30 Min. if Glycosuria is 4 plus. As Glycosuria Falls Continue Q. 30 Min. Smaller Doses Until Conscious.	Average 3-5 L. Saline 1 L. Saline I.V. Stat 3-5 L. Continuous Hypodermoclysis For Anuria 500 cc. 5% NACL I.V. and Double Fluids.	No glucose until Glycosuria Falls and then sparingly. (1 Gm./10 U. in Coma) Glucose by Vein and Stomach-Tube 25-50 Grams	Blood Sugar and CO ₂ Q. 30 Min. helpful but not essential. Indwelling Catheter Glycosuria Tests Q. 30 Min. if 4 plus Q. 15 Min. if Fading
New Patient With Ketosis Start Here	KETOSIS Malaise Anorexia Abdominal Pain Nausea Vomiting Restlessness Drowsiness Fatigue	Q. 2 Hrs. Glycosuria 20 U. if 3 plus 10 U. if 2 plus 0 if 0 or 1 plus until urine is free of acetone.	Q. 2 Hrs. 200 cc. Hot Salty 3% Bouillon, Broth, Tea, Coffee. If Vomiting Give Parenteral Saline	Glucose 10 Gm. Q. 2 Hrs. Until Acetone-Free, With Insulin.	Test for Acetone and Sugar Q. 2 Hrs. to guide insulin dose. When Acetone-Free, Irrigate Bladder and Remove Catheter.
Pre- and Post-operative Routine	COMPLICATIONS Severe Infection, Injury, High Fever.	With each feeding enough to control glycosuria.	Force Fluids	Six Equal Feedings Q. 4 Hrs. Both Day and Night.	Test for Acetone and Sugar During Each 4 Hr. Period.
NEW PATIENT Uncomplicated 1. Basal diet and fractional urines for 3 days. 2. Determine fasting blood sugar. 3. Insulin P.R.N. and diet increase for activity and growth.	CONTROL Be Lenient with the Elderly Diabetic With Protamine, Minor Postprandial Glycosuria is not thought harmful.	Prot. Zinc Insulin enough to eliminate nocturnal glycosuria and attain a normal fasting blood sugar level. If desirable to control postprandial glycosuria use old unmodified insulin.	Free Fluids	Basal Caloric Needs of expected wt. for age, sex, and height. (Moderate Cho.) Add allowance for activity and growth (High Cho. P.R.N.)	Fractional Urine Collection During Adjustments. 7 A.M. to 11 A.M. 11 A.M. to 4 P.M. 4 P.M. to 9 P.M. 9 P.M. to 7 A.M.
	STRESS Regular Exercise Study of Diabetes Weight Control OPTIMISM	Diminish dosage with control, physical activity, weight loss.			Later routinely check overnight urine twice weekly. Written diary of Insulin, Weight, Urinalyses and Complications.

dangerous if they divert the physician's attention from the essential administration of insulin. Remember that minutes are important: if insulin is handy, 50 units should be given immediately, before transfer to the hospital. The patient's room should be equipped with insulin, parenteral fluids, catheterization tray, blankets and hot water bottles before his arrival.

To gain a more rational perspective and a more indelible understanding of the problem, let us arbitrarily divide the treatment of coma into three parts, roughly demarcated by clinical and laboratory evidence. The first stage ("coma" on the chart) is characterized by uncontrolled glycosuria and drowsiness, if not unconsciousness; it requires heavy doses of unmodified insulin every thirty minutes and continuous parenteral saline, and demands the constant attendance of a physician. It usually lasts two to five hours.

The average case of coma requires between 200 and 252 units of unmodified insulin during the first 24 hours, if no glucosé is used⁽¹⁾. Too little insulin means certain death; too much can be safely recognized through the disappearance of glycosuria with frequent urinalyses and is easily corrected with a little glucose. Until glycosuria approaches the vanishing point, it is unwise to give *any* glucose. The Mayo Clinic regards the depth of unconsciousness as a better guide to insulin dosage than the blood sugar level. Protamine zinc insulin has not yet been shown to deserve a part in the treatment of coma.

The initial dose of 50 units of insulin hypodermically should be supplemented in the presence of circulatory collapse with 20 units intravenously. Every thirty minutes a dose of 30 to 50 units hypodermically should be repeated as long as unconsciousness persists, administering small amounts of glucose by vein or stomach tube if necessary to maintain mild glycosuria. Remember that *in coma the efficiency of insulin is tremendously impaired*—that 10 to 20 units are necessary to metabolize each gram of excess glucose.

Dehydration is extreme, and the average patient should receive 5 liters of saline solution within the first 24 hours. An initial intravenous administration of 1000 cc. of normal saline solution should be followed immediately by a continuous saline hypodermoclysis of 2000-4000 cc. In acidosis, the

chloride ion is excreted in combination with ammonia derived by splitting urea, and thus saline restores the alkaline reserve.

Coma patients should be wrapped in blankets and warmed with hot water bottles until the temperature rises to normal, when such measures may be discontinued.

Despite the presence, but especially in the absence of a history of dietary indiscretion or insulin omission, make a thorough search for pyogenic infection. An overweight elderly foreigner was hospitalized in impending diabetic coma with a history of a sprained ankle ten days previously. Despite intensive therapy, he lapsed into coma and died within a few hours. Autopsy disclosed a suppurative arthritis of that ankle. A higher index of suspicion for pus in this resistant case, and a simple diagnostic aspiration of the swollen joint, followed by surgical drainage would probably have saved this man. *Look for pus and drain it!*

When circulatory collapse is evident, one should frequently administer such stimulants as caffeine, adrenalin, or ephedrine.

Gastric lavage is particularly indicated in the presence of abdominal pain, distention or frequent vomiting. After lavage, 200 cc. of 3 per cent sodium bicarbonate left in the stomach will facilitate the subsequent administration of oral fluids.

A cleansing soapsuds enema is a wise routine measure, practiced in many diabetic clinics.

Glucose is certainly unnecessary until the glycosuria begins to clear up, and in the average case this means after 150 units of insulin have been given. As the blood sugar falls to a reasonable level, consciousness usually begins to return. The average coma blood sugar level is about 500 mg. per 100 cc. This represents only about one tablespoonful of excess sugar in the blood, and yet approximately 200 units of insulin are necessary to metabolize this small amount of glucose.

Hartmann's sodium lactate solution does correct the depleted alkaline reserve more rapidly than does saline, but unless the acidosis is unusually marked, as evidenced by a plasma CO₂ combining power of less than 10 volumes per cent, the administration of Hartmann's solution is often harmful, because it gives the physician a false sense of security and diverts his attention from the unaltered necessity of insulin in large doses.

With the control of glycosuria and the

1. Joslin, E. P.: Treatment of Diabetes, ed. 6, Philadelphia: Lea & Febiger, 1937.

return of consciousness, the second stage ("Ketosis" on the chart) begins, characterized by acetonuria. Treatment may be somewhat relaxed, insulin and glucose being given every two hours, and salty fluids on the intervening hours. With intelligent nursing assistance and good telephone communication, the physician should be able to direct subsequent therapy by remote control. This stage will probably last for twelve to thirty-six hours.

Every two hours a specimen of urine is taken directly from the indwelling catheter and tested for sugar and acetone; 100 cc. of orange juice or gingerale (10 Gm. of glucose) is given orally, and insulin is administered according to the glycosuria—20 units if heavy, 10 units if moderate, and none if slight or absent. These doses are rough suggestions, and will require revision for each patient.

On alternate hours the patient drinks 200 cc. of hot salty (3 per cent) broth or bouillon (Swift and Armour bouillon cubes contain the necessary salt). In addition to this hourly schedule of fluids, the patient may have unsweetened beverages if he desires them.

With the control of acetonuria, the indwelling catheter is removed, and the third stage ("Complications" on the chart) begins, lasting for two days in ordinary cases. In an effort to encourage carbohydrate tolerance the patient receives an *inadequate* caloric intake, divided into six equal feedings given every fourth hour day and night, accompanied by sufficient insulin to prevent glycosuria before the next feeding. The dose should be relatively uniform, but should gradually diminish as tolerance improves. In the face of complications, the problem of management are greatly simplified by continuing a similar schedule with *adequate* caloric intake, perhaps modified to four feedings given every sixth hour.

Although it is not directly a part of the subject of this paper, I have added to the chart data concerning the control of the otherwise normal diabetic, and this demands a few words of explanation. During periods of adjustment either in diet or in insulin dosage, it is well to collect the fractional urine specimens by the clock, as shown in the last column. If protamine zinc insulin is used, the dosage should be increased until there is no sugar in the overnight urine specimen, and then more accurately adjusted to attain a normal fasting blood sugar level,

Postprandial glycosuria is to be expected under these conditions, but it is not generally considered disadvantageous. An additional bedtime feeding will permit increase in the dose of protamine zinc insulin without danger of early morning hypoglycemic reaction, and thus will tend to diminish such glycosuria after meals. If multiple doses of unmodified insulin are preferred, the fractional urine specimens during the day are much more important than the overnight specimen. In either case, the urine need not be checked daily after satisfactory control is attained, but should be checked routinely at least once a week, and of course immediately in the presence of any symptoms suggestive of ketosis and impending coma.

In closing, I should like to reiterate several conclusions which are particularly applicable to medical and hospital facilities in this state:

- 1) Confronted with the problem of diabetic coma, the duty of the first physician is to institute promptly and to maintain adequate treatment with insulin and saline, and not to be diverted by complex and unnecessary laboratory analyses.

- 2) Frequent analyses of urine taken directly from a free-draining indwelling catheter furnish simple and adequate guidance during the first few critical hours for the management of diabetic coma, unless persistent anuria is encountered.

- 3) The first stage of diabetic coma, characterized by unconsciousness and uncontrolled glycosuria, demands large doses of insulin every thirty minutes, continuous administration of parenteral saline, and the constant attendance of the physician. Only when glycosuria approaches extinction is glucose administration indicated, and then only in small amounts. Remember the tremendous impairment of insulin efficiency in the presence of ketosis: each gram of excess glucose requires from 10 to 20 units of insulin for its metabolism.

- 4) The second stage of diabetic coma, during which acetonuria persists, requires insulin and oral glucose every two hours, supplemented by salty hot bouillon on alternate hours.

- 5) The third stage of diabetic coma is the period of recuperation following the control of the acetonuria. Improvement in carbohydrate tolerance is encouraged by inadequate caloric intake. Management is greatly

simplified by giving equal feedings and insulin dosage every fourth hour day and night.

6) A similar schedule with adequate caloric intake, perhaps modified to four equal feedings every sixth hour, should be continued for the duration of the complications.

7) The average case of diabetic coma, in a clinic which discourages the use of glucose, requires 210 units of insulin and 5000 cc. of saline during the first twenty-four hours. Fatalities in our practice should be critically reviewed by these standards.

Abstract of Discussion

Dr. Richard Z. Query, Jr. (Charlotte): As has been pointed out, diabetic coma as a rule is precipitated by one of three factors: infection, dietary indiscretion, or too little insulin. Likewise, the mortality of patients in coma is affected by several factors. Age is very important. "Youth carries with it a great advantage." The death rate is around eight to nine times higher above the fourth decade than below the fourth decade. Impaired renal function is of bad omen. The prognosis is definitely worse with non-protein nitrogen above 40 mg. per cent. It is very important to get a non-protein nitrogen estimation along with the initial blood sugar and carbon dioxide combining power tests.

The importance of a careful search for infection has been mentioned. This cannot be stressed too much. Coma of long duration with a deep degree of unconsciousness has a very marked effect on the mortality and calls for more vigorous treatment. Diabetic coma, when severe and of long duration, usually results in vasomotor collapse, which increases the mortality. In one large series of cases the mortality was 40 per cent when the average systolic blood pressure was below 90 mg. of mercury.

All of the above mentioned factors should be carefully looked for, and if any are present the proper therapeutic measures as outlined by Dr. Smith, should be instituted.

Within the past two years, Rabinowitch, from the Montreal General Hospital, has written much on the use of protamine zinc insulin in diabetic coma. Most observers have felt that protamine zinc insulin with its slow prolonged action was unsuitable for treating coma. Rabinowitch is not in accord with this. His reports and studies are quite impressive in a rather small series of cases.

He gives 100 units of unmodified insulin intravenously, and 100 units of unmodified insulin and 200 units of protamine zinc insulin subcutaneously as soon as the diagnosis is assured. Fluids and supportive treatment as necessary are given. About five to six hours after administration of the insulin, small feedings of glucose, 30-40 Gm., are given every hour for a period of thirty to thirty-six hours.

He has treated 26 cases by this new method. The average blood sugar before treatment was 612 mg. per cent. It was reduced to 165 mg. per cent during an average period of five and one half hours.

He feels that there are certain definite advantages in this new form of treatment, while the advantages of the old method are retained. For example, the initial dosage of insulin is large. Too much stress cannot be placed upon this point. A person dying in diabetic coma is dying from lack of insulin. Insufficient dosage will almost certainly result in

death, whereas, according to the literature, death from over-dosage of insulin in the treatment of coma is extremely rare.

Another advantage is the injection of unmodified insulin intravenously. This insures quick action of the insulin—another essential for recovery, particularly in severe cases.

A third advantage of this method of treatment, according to Rabinowitch, is that the administered carbohydrate enhances the storage of glycogen and thus rapidly reduces the degree of ketosis. Rapid disappearance of the ketone bodies is one of the characteristics of this new method of treatment.

Finally, the frequent feedings of carbohydrates practically eliminate the possibility of insulin reactions. He has not noticed a single reaction in his cases in spite of a persistent hypoglycemia for several hours.

Rabinowitch's mortality for this small group has been less than with the older method of treatment.

Dr. L. A. Crowell, Jr. (Lincolnton): I think Dr. Smith's paper is a very excellent one, and of high scientific value. However, I can't agree with the doctor so far as to say that we shouldn't use blood sugar determinations if it is possible in treating diabetic coma.

I have never thought that it was necessary to give glucose along with the insulin. The blood stream is loaded down with sugar and all you have to do is give insulin and make it available; and I don't know of any difference in the sugar in the blood stream which is made available by insulin and that which we give in the form of oranges. I think the best plan to follow in treating diabetic coma is just to treat every case individually and give as much insulin as it takes.

I am not so sure that the clinical symptoms in coma would be a safe guide as to when the patient comes out of coma, especially when the patient has been unconscious for twenty-four hours or more. I have seen two or three cases of coma where you couldn't tell the difference between a high blood sugar and a blood sugar at shock level. They pass by 100 mg. per cent without any lessening in the unconsciousness.

Dr. T. W. Baker (Charlotte): I agree with Dr. Crowell entirely that you cannot determine the ultimate prognosis of the patient by the height of the blood sugar or the depth to which it has fallen. I think there are some clinical considerations that are of more value, perhaps, in estimating the ultimate prognosis of the diabetic coma patient.

Several years ago I had the opportunity of studying 108 cases of diabetic coma in one of the larger clinics. We found there were four factors to determine the ultimate prognosis of the diabetic coma patient. Those were: (1) the age of the patient; (2) the degree of unconsciousness; (3) the presence or absence of infection; (4) the duration of coma before the institution of treatment. This is perhaps the most important clinical consideration. If we are able to get a patient who has been comatose less than six hours, the prognosis is usually very good; if over twelve hours, the prognosis is somewhat doubtful.

Dr. Verne S. Caviness (Raleigh): It is very easy to overlook the fact that coma is not necessarily or primarily a sugar metabolism disturbance. We are dealing very often with a circulatory failure as one of the principle factors in the production of the coma.

With reference to the long disputed argument as to whether or not coma can be treated without blood sugar tests, I think that as long as you are dealing with people who have a renal threshold of 170, which is normal, you will have no difficulty in

handling these cases. But we are not dealing with people of normal catabolism. I saw a patient quite recently with a renal threshold of 90. He had been treated in a very good clinic, and he stayed in shock most of the time because they were trying to treat him without doing any blood sugar test. Every time they would get the sugar out of his urine he would go into shock.

In contrast to that, I would like to refer to a patient I have had for many years—a physician whose renal threshold is 270. Now, if that patient goes into diabetic coma you can treat him with reasonable safety without much danger of his going on over into shock by keeping his urine sugar free.

I think the paper was very good, and I enjoyed it; but I think we need to be very careful in attempting to treat any coma without blood sugar tests.

Dr. O. Norris Smith (Greensboro): I want to thank these several gentlemen. Their points are certainly well taken, but my point is—and I still hold to it—that the treatment for the first few hours does not depend on the blood sugar level. The individual who is handling diabetic coma on the criteria of the glycosuria can safely give large doses of insulin until the glycosuria clears, at which time he slows it down a bit. That is the time when you have to check yourself and start making plans and changing the treatment.

The whole purpose of my paper was to get across—not to the men who are particularly interested in diabetes, who need no advice on the subject, but to the men who only occasionally see a diabetic coma—the simplified method, and at least to alter that conception of diabetic coma in the minds of many men who have not been exposed to the recent teachings.

ADDISON'S DISEASE

With Report of a Case

PAUL H. RINGER, M. D.

and

WILSON PENDLETON, M. D.

ASHEVILLE

"The leading and characteristic features of the morbid state to which I would direct attention are anemia, a general languor and debility, a remarkable feebleness of the heart's action, irritability of the stomach and a peculiar change of the color of the skin occurring in connection with the diseased condition of the suprarenal capsule." (Thomas Addison—1855).

A patient, Mr. X. Y., from New Jersey, aged 58, was first seen on February 17, 1940. He had consulted several physicians in the North and had been to White Sulphur Springs and to Palm Beach, in the hope that a change of climate would benefit him. In Palm Beach he was told that his lungs were worse, and so he came here. On arrival in Asheville, he was seen by one of us (P.H.R.),

but no examination was made, as his report from Florida had not arrived. At that time he seemed quite normal mentally, though weak and emaciated physically. A few days later he became worse, was irrational and not easily controlled. He was then seen by W. P. and was admitted to the Asheville Mission Hospital on February 23, 1940.

His present illness began in July, 1939, with increasing fatigue and progressive loss of weight, and some nausea and vomiting. He had used very little alcohol and tobacco recently. He had a moderate cough with clear sputum, and marked dyspnea on exertion. He ran a slight afternoon temperature.

One brother had had tuberculosis, and died of coronary occlusion. At the age of 21 the patient was diagnosed as having pulmonary tuberculosis. He was sick for six or seven months, and went to Lake Placid, N. Y., where he recovered. He was well until 1917, when he developed a tuberculous laryngitis. He was in Asheville for three years, eventually making a complete recovery. In 1924 he had sciatica, lasting six weeks. In 1926 he had lumbago and was treated by diathermy. He had been working hard at the practice of law and as dean of a law school until the latter part of 1939.

Physical findings revealed a weak, emaciated man. There was some bronze pigmentation of the skin on the face, but none on other parts of the body. He had recently been exposed to the Florida sun. The teeth and gums were in poor condition. The pupils were normal. The lungs showed a few scattered rales, but nothing suggestive of a very active process. His blood pressure was 90 systolic, 60 diastolic. The abdomen was negative. The patient was incoherent, disorientated and very much confused. He seemed to have a fear of something unknown and a great desire to go home. He confused days, acts and personalities. An x-ray of the lungs showed a slight increase in bilateral involvement as compared with films taken in January, but the pulmonary process could not account for his condition.

On admission the urine was acid, and the specific gravity was 1.015, with a trace of albumin, and an occasional red blood cell and hyaline cast.

On February 24 a transfusion of 450 cc. of blood was given by Dr. W. P. Herbert, after which the red blood cell count was

5,410,000, and the leukocyte count 13,150, with 42 per cent polymorphonuclears. A spinal tap was also done and about 3 cc. of fluid removed. The pressure was very low, and the fluid normal.

Several urinary examinations were made but they revealed nothing of moment. During his stay in the hospital the patient ran an irregular temperature with an occasional rise of a degree. Once or twice it rose over 100, and it reached a maximum of 101 the day before his death.

Because of the great loss of weight, asthenia, hypotension, and the rather peculiar color of the face (although this was not at any time characteristic of Addison's disease), it was believed that the man had an adrenal deficiency. He was given eschatin and sodium chloride, and the nausea and vomiting stopped. The highest blood pressure obtained was 100 systolic, 60 diastolic. The mental condition varied. Three days before death he was lucid the entire day, but as a rule he was very much upset mentally, showing the type of mental abnormality that one sees in delirium tremens. Carphologia was present, and the patient claimed that he saw animals and human faces on the walls and ceiling.

On the morning of March 7 he became very much worse, developed edema of the lungs, and died rather suddenly. A partial autopsy was performed an hour and a half after death by Dr. Curtis Crump, whose report follows:

"Well developed, moderately undernourished, elderly male. Skin shows brown diffuse pigmentation of head, neck and hands, but rest of body is of normal color. No deformities or tumors seen. Cranium and chest not examined.

"*Abdominal Cavity:* No free fluid. Stomach, intestines and colon normal. Liver shows slight passive congestion. Adhesions between gall bladder and duodenum.

"*Kidneys:* Both large—about $1\frac{1}{2}$ times normal size—and red. Capsules adherent. Cortex thin. Pelves normal. The perirenal fat was fibrous.

"*Adrenals:* Right: Entire parenchyma replaced by caseous nodules which are adherent to the surrounding fat. It measures 6 cm. x 5 cm. x 3 cm.

"Left: Measures 4 cm. x 3 cm. x 2 cm. and shows a very small amount of parenchymatous tissue and a few moderate sized

caseous nodules in the gland substance, also adherent to the surrounding fat.

"*Microscopic:*

"*Kidneys:* Tubules show granular degeneration of cells, with casts in lumen. The glomeruli and small vessels show passive congestion, some fibrosis and lymphocytic infiltration between the tubules.

Adrenals: Show large areas of caseation surrounded by lymphocytes, fibrosis and epithelioid cells. In other areas small tubercles are seen, with giant cells in the center. In a few places a small number of adrenal cells are seen, but they show granular degeneration (figs. 1 and 2).

"*Diagnosis:* Tuberculosis of adrenals.
Chronic tubular nephritis."

Discussion

Addison's original monograph describing the disease that bears his name is a monumentally interesting and far-reaching document. Not only did it, in 1855, describe a new clinical entity, but it focused medical attention on the ductless glands and their diseases. Addison's eleven cases are all well described, and in themselves constitute a text for the future study of the condition.

There is neither time nor need for a consideration of the various steps by which the treatment of Addison's disease has reached the present level. It is well to come at once to modern methods and to present briefly the present management of the disease, which rests on the following tripod:

1. Administration of sodium chloride
2. Restriction of potassium intake
3. Substitution therapy with extracts of the adrenal hormone.

Loeb was the one who introduced increased sodium chloride administration and restricted potassium intake in the treatment of Addison's disease. "He had been working for many years on the acid-base equivalent and the electrolyte structure of the blood. In taking care of patients with Addison's disease in the wards, the clinical condition in Addisonian crises suggested to him the possibility of Potassium poisoning. This led to investigation of the electrolyte patterns of these cases, which permitted the discovery of the altered Potassium-Sodium ratio with lowered Sodium and increased Potassium. This observation, in turn, suggested the use of Sodium Chloride in the treatment of Addisonian crises."⁽¹⁾

1. Editorial, J.A.M.A., January 29, 1940.

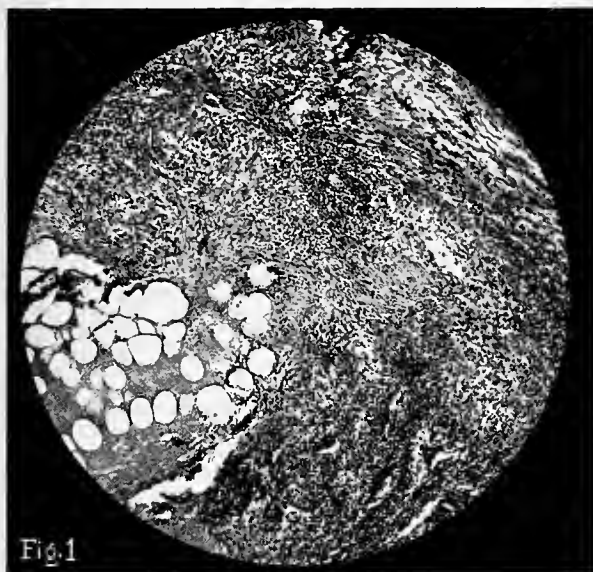


Fig. 1. Microphotograph of a section of the adrenals, low power.



Fig. 2. Microphotograph of a section of the adrenals, high power.

In modern treatment, 5 to 10 Gm. of sodium chloride should be given daily in the form of tablets or capsules, while the general diet should be rich in salt. Rountree says that to rely on salt alone is to court disaster; but Dr. Hugh Morgan, of Vanderbilt University, told me that in the Vanderbilt Hospital they controlled their cases of Addison's disease very satisfactorily on high sodium and low potassium diets and only occasionally had to resort to substitution therapy.

Potassium Restriction:

1. Limit selection of bread, cereal and and sugars to the highly refined product.
2. Restrict moderately the use of milk, meats, fruits, vegetables, condiments and certain beverages.
3. Pending further investigation, cook meat and vegetables according to a special method whereby the content of potassium is reduced.

Cut the vegetable into small pieces and cook in from six to eight times as much water as vegetable. This reduces potassium content 60 to 70 per cent, without a concurrent diminution in palatability.

For cooking meat cut into small pieces and cook in a so-called parchment paper bag in from six to eight times as much water as meat. By this method the potassium content is reduced 75 per

cent, while other nutrients and extractions which give flavor are retained in the meat.

Rountree says: "The treatment of Addison's disease during the last decade has undergone radical changes with the introduction of an active cortical hormone and the recognition of the importance of salt. Now, as always, emphasis must be placed upon adequate rest, warmth, control of activities and the avoidance of stress, strain, purgation and exposure to cold. Whereas formerly the management of this disease exhausted the therapeutic skill of the physician, today with the use of cortical hormone and a rich diet in salt, the patient may be relatively free of symptoms. Formerly the patient was more or less continually in a crisis, while now he is often a semi-invalid, or even a fairly active ambulant patient, capable of conducting considerable business."

For substitution therapy there are available two commercial products—cortin and eschatin. Their expense is a matter of importance. The cortical hormone of the adrenal gland, isolated by Swingle and Pfiffner, at present not generally available, is given parenterally in doses of 1 to 5 cc. daily; and desoxycorticosterone acetate, discovered by Steiger and Reichstein in 1937, is injected in sesame oil in doses of 5 to 25 mg. daily.

It is stated by Rountree that the administration of this preparation is attended with some danger, and that a new method of ad-

ministration is under clinical trial by Thorn and collaborators—namely, the surgical implantation of pellets of this preparation in the fatty tissues at the back. This is continually absorbed, thereby supplying the hormone need of the patient over weeks and months.

Summary

We have presented the report of a case of Addison's disease in its terminal stages. With the autopsy findings, we do not believe that any method of treatment would have been of avail. We have tried to give briefly the present conception of the condition and of its management.

DERANGEMENTS OF THE LOW BACK WITH SCIATICA

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CHARLOTTE

Anatomy

In approaching the subject of low back derangements a brief review of the anatomy of the area may help us understand its problems more clearly. The spinal cord ends at about the level of the body of the second lumbar vertebra. The lumbar and sacral nerves are given off considerably higher in the cord than their point of emergence from the spinal column. Each nerve has a posterior root and an anterior one. These roots from the first lumbar nerve downward pursue a vertical course distally within the spinal canal and comprise the cauda equina. Each root pierces the dura mater separately; the anterior and posterior roots join immediately, and thereafter continue enclosed in a single tubular sheath in which is included the spinal ganglion of the posterior root. The spinal nerve thus ensheathed occupies the intervertebral foramen.

After emerging from the foramen the nerve immediately divides into an anterior and posterior branch. The posterior rami innervate the skin of the back and buttocks and the longitudinal muscles of the back, but not the muscles of the limbs.

The lumbosacral trunk comprises the whole of the anterior division of the fifth lumbar nerve and part of that of the fourth. It appears at the medial margin of the psoas major muscle and runs downward over the

pelvic brim to join the first sacral nerve and unites with portions of the second and third sacral nerves to form the sacral plexus—a flattened band of nerve fibers—converging toward the greater sciatic notch. The greater portion of the plexus continues downward through the sciatic notch to form the sciatic nerve. It enters the gluteal region between the piriformis and superior gemellus muscles. It runs laterally and downward through the gluteal region in the hollow between the greater trochanter of the femur and the tuberosity of the ischium. The sciatic nerve is covered posteriorly by the gluteus maximus and emerges into the thigh below its inferior border. It usually terminates at the upper portion of the popliteal fossa by dividing into the common peroneal and tibial nerves. These two nerves are sometimes separated as far as their origin, in which case the common peroneal usually pierces the piriformis muscle.

The sciatic nerve supplies nearly the entire skin of the leg, the muscles of the back of the thigh and those of the leg and foot.

Pathology

With this picture of the anatomy before us we realize that from a mechanical standpoint there are many points along the course of the nerve where pressure or irritation can occur, which if unrelieved may cause sciatic pain. Within the spinal column herniation of a nucleus pulposus into the spinal canal may produce pressure on the nerve roots. Other types of tumor in this area include a thickened ligamentum flavum, cord tumor or a metastatic lesion.

At the intervertebral foramen there may occur many types of abnormalities which might lead to pressure on the spinal nerves or be responsible for pull or drag on the nerves. Arthritis is one of the most common causes, contributing either by direct pressure and irritation or by creating inflammatory and fibrositic deposits in the nerve sheath or neighboring structures. The intervertebral foramen may be the site of pressure because of diminution in its circumference (neurodocitis), edema from inflammatory reaction (arthritis, trauma, varicosities), or later scarring from some one of these causes with constricting bands and fixation.

Anomalies of the facets resulting in posterior luxation, abnormal mobility at the lumbosacral junction, the horizontal sacrum

and the acute lumbosacral angle, may produce either pressure or drag on the components of the sciatic nerve. Loss of the intervertebral disc may produce mechanical pressure at the point of emergence of the nerve by decreasing the size of the foramen.

Anomalies of the pedicle resulting in spondylolisthesis or spondylolysis may at times produce mechanical drag or strain, particularly when there has been superimposed trauma or where there has been loss of muscle tone as a result of age or illness.

Enlarged transverse processes of the fifth lumbar vertebra may create an asymmetrical synostosis with the ilium and the sacrum, and produce an unstable low back with sciatic pain. It is interesting to observe that often the pain is on the opposite side from the impinging transverse process.

Within the past five years the work of Ober⁽¹⁾, Freiberg⁽²⁾ and Heyman⁽³⁾ has focused our attention on superficial lesions of the myofascial and aponeurotic structures as a contributing factor in sciatic pain. Pressure on the nerve as it emerges from the sciatic notch by the piriformis muscles, by a too tight gluteus maximus or even by contracture of the fascia lata may be the responsible producing agent.

Lesions of or about the sacro-iliac joint may reflexly affect the nerve. A tumor or swelling anywhere along the course of the nerve may be responsible.

It is Steindler's⁽⁴⁾ contention that many cases of low back pain with sciatic radiation are purely reflex phenomena and are not due to direct pressure on the sciatic nerve except in cases of tumor, such as a herniated disc. He has devised a technique of novocain injection of certain "trigger points" which completely relieves the sciatic radiation and, in his opinion, differentiates those cases where the pain is due to direct pressure from those in which it is a reflex phenomenon.

Symptomatology

These patients present themselves with certain outstanding signs and symptoms which may have minor variations, depending upon the cause of the sciatic pain. A

history of trauma not necessarily severe may lead one to suspect the possibility of a herniated disc. In the typical case of sciatica the chief complaint is pain down the back of the afflicted leg. The patient may be unable to extend his leg when lying in bed and prefers to keep the knee and hip flexed in an effort to obtain relief from his distress. He may carry the spine tilted to one side in an effort to obtain relief. At times the back pain is the chief complaint, with the sciatic radiation secondary, and occasionally paresthesias in the affected limb may be of significance. Sometimes the patient may describe a slipping experience in the low back which accentuates the pain. Coughing, sneezing or even evacuation of the bowel may affect the nature of the distress.

The radiation has been described as progressing from the hip to the knee, to the ankle or foot or to the great toe, or it may make its first appearance as a distress about the calf of the leg or in the ankle. In many instances the first history is of pain in the back, which gradually follows a downward course. In some instances the distress may be excruciating, requiring opiates to relieve it; in others, it may be well tolerated without sedatives.

Diagnosis

The diagnosis of sciatic pain is not a difficult one to make in an honest patient. The determination of its cause is, in many instances, one of the "unsolved problems" in medicine. The physical examination should be routine and thorough. Foci of infection are not within the scope of this paper, but must always be considered in the differential diagnosis, as must be consideration of the vitamin intake of the patient. The patient should be examined standing with good light. General posture, the appearance of the normal anatomical curves in the back, atrophy of the buttocks and leg, and abnormal curvatures of the spine should be noted. There may be limitation of forward or backward bending as well as tilting of the pelvis to the side. The patient should also be examined in the sitting position and any abnormalities noted. The back and spine should be carefully palpated for tender areas, as well as the thigh and buttock along the course of the sciatic nerve.

Certain signs and tests are valuable in making the diagnosis.

With the patient supine his response to

1. Ober, F. R.: Back Strain and Sciatica, J. A. M. A. 104:1580-1583 (May 4) 1935.

2. Freiberg, A. H.: Sciatic Pain, Arch Surg. 34:337 (Feb.) 1937.

3. Heyman, C. H.: Thoughts on the Relief of Sciatic Pain, J. Bone and Joint Surg. 16:889-894 (Oct.) 1934.

4. Steindler, A.: Differential Diagnosis of Pain Low in the Back: Allocation of Source of Pain by Procaine Hydrochloride Method, J. A. M. A. 110:106-113 (Jan. 8) 1938.

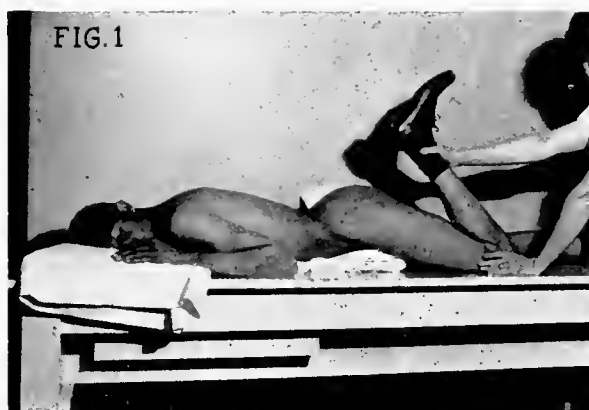


Fig. 1. Illustrating positive Eley sign.

Fig. 3. Illustrating shortening of the posterior muscles, sitting. (From Ober, in the *Journal of the American Medical Association*, May 4, 1935.)

Fig. 2. Illustrating positive Lasegue sign.

Fig. 4. Illustrating positive Ober sign.

the Lasegue test, (fig. 2) (raising the extended leg and observing and comparing the reaction of the two legs) is recorded. Frequently the exacerbation of the pain is extremely severe when this test is done. According to Ellis⁽⁵⁾ the Lasegue sign is apt to be negative if the lesion is at the nerve root or funiculus—as, for instance, in cases of pressure from a prolapsed disc or funicular compression from intervertebral foramen changes—until a high degree of flexion of the leg is accomplished. It is likely to be positive soon after flexion of the hip begins in lumbar plexus lesions and sciatic trunk pathology. The sign is not however pathognomonic for all types of sciatica, and may be entirely absent in early or mild sciatica.

When the patient is asked to sit up from the supine position with the legs fully extended, if contracture of the fascia lata is present, he will be unable to flex to even a right angle (fig. 3).

In those cases with flexion contracture,

Eley's sign (fig. 1) is usually present also and is demonstrated as follows: With the patient prone the leg is flexed on the thigh. The pelvis will rise from the table on the side the test is made when evidence of contracture of the fascia lata is present.

Ober⁽¹⁾ of Boston devised a test (fig. 4) wherein the patient lies on the unaffected side, with the lower leg partially flexed at the hip and knee. The affected leg is fully extended at the hip, and the flexed knee and leg allowed to rest in the examiner's hand. If the patient cannot then adduct the flexed knee, Ober regards it as evidence of contracture in the fascia lata which is probably mechanically responsible for the sciatic pain.

A rectal examination is of importance, and may reveal pathology which would otherwise be missed.

Finally a thorough neurological examination may show that the lesion is intraspinal and probably due to a ruptured intervertebral disc. Particularly in cases of chronic persistent sciatic pain unrelieved by therapy must this diagnosis be considered. Spinal puncture performed in the low lumbar spine

5. Ellis, Jno. D.: Examination of the Injured Back. *Am. J. Surg.* 42:361-375 (Dec.) 1935.

and using only the first 2 to 5 cc. of the spinal fluid content, is highly suggestive if the total protein content is in excess of 40 mg. per cc. The injection of iodized oil or air with fluoroscopic and roentgenographic studies will determine the diagnosis in these cases.

Spurling in a recent article⁽⁶⁾ states that the diagnosis of ruptured intervertebral disc can very frequently be made by a careful neurologic examination. The Achilles reflex and a segmental sensory loss or impairment (dermatome area) are indicative of the location of the ruptured disc. The diagnosis, in his opinion, may be made accurately without the use of spinal puncture or lipiodol studies.

At the Mayo Clinic it has recently been determined that the displaced disc does not occur more than three times in a thousand pathological low backs with sciatic pain.

Thorough x-ray examination of the spine is of the utmost importance, and will in many instances reveal spondylolisthesis, arthritis, posterior luxation and many other abnormalities of the lumbosacral articulation which may be the cause of or a contributing factor in the sciatic pain.

A recent review of the films taken in 100 cases of sciatic pain showed x-ray findings of arthritis or some type of congenital abnormality in over 80 per cent of them.

Treatment

Treatment varies, depending on the assembled information following the completed diagnostic studies. The milder cases which are due to postural defects usually respond to corrective exercises, heat and immobilization of the low back by strapping or belts. Temporary and sometimes permanent relief is accorded by injections of saline and novocain into the epidural space, and this may be added to the above therapy. It is often both wise and economical to make hospital cases of these patients. Firm beds, Buck's extension to the involved limb and plaster girdles have been used with success in these controlled cases.

Sectioning of the iliotibial band, as advocated by Ober, has been done in an increasing number of cases in our work. Stretching of the extended leg while under anesthetic combined with the Ober sectioning has

come to be a rather routine procedure where the sciatica is intractable and the Ober and other tests are positive. We have not used the stripping operation of Heyman, nor the piriformis muscle sectioning advocated by Freiberg, because of the relative simplicity of the Ober sectioning and its reasonable success in our hands. Removal of the herniated nucleus pulposus should be done where the diagnostic studies point to this type of pathology, and this operation is safest in the hands of a competent neurosurgeon. Spine fusion for correction of low back abnormalities, together with iliotibial band sectioning, may be indicated. Ober feels that even in cases with an apparently unstable, painful low back, contracted iliotibial bands should be sectioned before performing spine fusions.

We have performed sectioning of the iliotibial band in approximately 75 cases of low back derangements with sciatica. Some of these are too recent to determine the permanency of the relief obtained. For this paper, however, a questionnaire was sent to 40 of these patients who had had fasciotomies one or more years ago. Replies were received from 26. All 26 had received relief. Twenty of them were completely well and able to carry on their usual occupations. The remaining six were well of their sciatic pain, but complained of some numbness in the affected leg or occasional back pain. Those 6 patients, though, felt that they had received definite benefit from the operation.

Summary

Cases of low back derangement with sciatica seem to appear with increasing incidence. The answer to this may be poorer muscular development, which fails to compensate for weakness in the anomalous spinal column. These patients need careful x-ray, clinical and laboratory studies, including a careful neurological examination.

Some cases may be due to nutritional deficiencies; they may be of infectious origin; or they may be due to a mild postural defect. These respond to conservative treatment. Other cases may prove quite intractable and require hospitalization and treatment for a longer period and of a more radical character.

The displaced or herniated intervertebral disc must be considered in a certain number of cases of sciatic pain, but the incidence of displacement is comparatively low.

6. Spurling, R. G. and Bradford, F. K.: Neurologic Aspects of Herniated Nucleus Pulposus, J. A. M. A. 113:2019-2022 (Dec. 2) 1939.

We have found that sectioning of the iliotibial band, together with manipulation of the involved leg where the Ober and other signs indicate definite contracture of the fascia lata will give a high percentage of cures in derangements of the low back with sciatic pain.

BACTERIAL ENDOCARDITIS DUE TO THE STREPTOCOCCUS VIRIDANS; RECOVERY FOLLOWING SODIUM SULFAPYRIDINE THERAPY

EDWARD S. ORGAIN, M. D.

and

MARY A. POSTON, M. A.

Bacterial endocarditis, regardless of the etiologic organism, is regarded generally as a serious and usually fatal disease^(1, 2). This is particularly true of streptococcus viridans endocarditis, in spite of the optimistic reports by some^(3, 4, 5), and the demonstration of healed endocarditis by others^(6, 7). Prior to the advent of chemotherapy in the form of sulfanilamide and its related compounds, a wide variety of substances, particularly the chemical dyes, arsenical compounds, vaccines, and immunotransfusions were tried, but none has merited general therapeutic approval. Since the advent of sulfanilamide and its derivatives there have been a few reports of marked improvement^(8, 9, 10, 11), and

one instance of recovery⁽¹²⁾ following the exhibition of these drugs. More recently heparin in conjunction with sulfapyridine⁽¹³⁾ has been utilized in bacterial endocarditis with encouraging results in the initial cases.

For the past two years a special study of all cases of bacterial endocarditis admitted to Duke Hospital has been made by the authors, and since recovery from this disease is unique, we feel it worthwhile to report one instance of Str. viridans endocarditis, superimposed on a previously damaged rheumatic heart, wherein complete recovery followed the intravenous, rectal, and oral administration of sodium sulfapyridine. We wish to emphasize the type of treatment administered, and the importance of special blood studies, which we have found very helpful in the determination of recovery from this disease.

Case Report

History. H. W., a white, 29 year old male farmer, entered Duke Hospital on April 5, 1939, complaining of anorexia, weight loss, joint pain, palpitation, dyspnea and precordial distress. His family, marital and past histories were essentially non-contributory, except as detailed below.

His health had been good until April, 1927, when an acute attack of migratory polyarticular arthritis, typical of rheumatic fever, required bed rest for three months. Frequent recurrences of mild joint pain were noted during the ensuing four years. He first entered Duke Hospital on December 8, 1931, for one week of observation, complaining of weakness, palpitation and dyspnea for several months. Physical examination revealed fever, tachycardia, moderate cardiac enlargement, mitral systolic and diastolic murmurs, an aortic diastolic murmur, Corrigan pulses, and a blood pressure of 126 systolic, 40 diastolic. Blood counts indicated a mild anemia and moderate leukocytosis. A blood Wassermann test was negative, and a blood culture was sterile. An electrocardiogram showed partial heart block (P-R interval .25 sec.), and left axis deviation. Tele-roentgenogram revealed marked left ventricular enlargement. The following diagnoses were made: Acute rheumatic fever,

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rheumatic carditis, active, with cardiac enlargement, and mitral and aortic insufficiency. Bed rest at home and salicylate therapy were advised at the time of discharge.

The patient returned on April 5, 1939, complaining primarily of anorexia and weight loss. During the interval he had led a "chair-bed" existence, and had noticed fleeting joint pains, with gradually increasing exertional dyspnea. He remained fairly well, however, until November, 1938, when he had a febrile illness, manifested by fever, chills, delirium, unconsciousness, and a skin rash, which was diagnosed as "scarlet fever." Hospitalization was required for one week, and treatment consisted principally of blood transfusions. He felt that he had never recovered from this illness, and until the time of admission there had been progressive anorexia, weakness, palpitation, fleeting joint pains, precordial discomfort, dyspnea, and loss of 10 pounds of body weight. During the two weeks just prior to entry, pain in the fingertips was noted. He had been aware of intermittent mild febrile periods, but there had been no definite chills.

Physical Examination. The temperature was 37.5°C., the pulse rate 80, the respiratory rate 16, and the blood pressure 135 systolic, 40 diastolic. The patient appeared to be a chronically ill, slender, young white man, who exhibited definite mental retardation. The skin showed a fine erythematous rash over the thorax. No petechiae were seen in the skin or mucous membranes at entry, but several developed in the conjunctivae during the first few hospital days. The spine was slightly kyphotic. The cervical glands showed moderate enlargement, but there was no generalized lymphadenopathy. The eyes were normal except for systolic pulsations easily visible in the retinal arterioles. The nose was normal. The teeth were dirty and carious, with gingival retraction and pyorrhea. Small tonsillar tags were present in both fossae. Marked systolic pulsations were noted over the carotid vessels. The thorax was slender; the lungs were clear, except for a few rales at both bases. The heart was markedly enlarged to the left, the apex being visible and palpable in the sixth intercostal space, 12 cm. from the mid-sternal line. At the apex the first sound was accentuated, and was followed by a soft, blowing systolic murmur. An early diastolic murmur transmitted from the base, and a low-pitched, rumbling, mid and late diastolic murmur localized at the apex, were audible.

Over the base the aortic second sound was accentuated, and there were soft systolic and loud diastolic murmurs. The diastolic murmur was early, high-pitched and was transmitted down the left border of the sternum to the apex. The rhythm was regular. The peripheral vessels were not thickened; the pulses were typically Corrigan in type. The abdomen was essentially normal, except for the spleen, which was felt just beneath the left costal margin. Genital and rectal examinations were normal. The extremities were grossly normal. The reflexes were physiological.

Laboratory Data. The hemoglobin was 13.3 grams (86 per cent), the red blood cell count was 4,560,000, the white blood cell count was 7,150, with 79 per cent polymorphonuclear leukocytes, 1 per cent eosinophils, no basophils, 5 per cent monocytes, 5 per cent large lymphocytes, 10 per cent small lymphocytes. The color index was .94. The sedimentation rate was 28 mm. per hour, corrected. A blood Wassermann test was negative. Repeated urinalyses were negative, except for an occasional white blood cell on microscopic examination. A throat culture showed only *Str. viridans*. Fluoroscopy and teleroentgenogram showed the heart to be larger than when previously examined, particularly in the region of the left ventricle, which was rounded in shape. Pulsations were vigorous. The aorta was dilated and slightly tortuous. The lung fields were clear. The cardiac measurements were: right border 3 cm., left border 14 cm. from the mid-sternal line; total 17 cm.; great vessels 8 cm.; internal diameter of the chest 27.5 cm. An electrocardiogram showed partial heart block, without dropped beats, P-R interval .3 sec., left axis deviation consistent with left ventricular hypertrophy, distinct notching of P 2, inversion of T 2 and T 3; the precordial lead was normal.

Course in the Hospital. The patient was placed at complete bed rest, given fluids as desired, and a high caloric, high vitamin diet, supplemented with iron, liver extract, and blood transfusions. During his first week in the hospital he was afebrile, except for the first hospital day, when his maximum temperature was 38.1°C., and six consecutive blood cultures, taken at daily intervals, were positive for *Str. viridans*, the colony count varying from 4 to 26 colonies per cubic centimeter of blood. During the first few days, he developed petechiae in the conjunc-

tivae, and one large purpuric spot with soreness and tenderness in the tip of the right index finger.

On April 11 (seventh day) he was given 4 Gm. of sodium sulfapyridine intravenously (5 per cent solution in distilled water), without reaction, except for slight nausea. The blood concentration taken four hours later was 5.5 mg. per cent, and 8 hours later was 4.1 mg. per cent. On April 12 (eighth day), a second dose of 4 Gm. was given intravenously, which produced nausea and vomiting during the administration of the drug. The vomiting lasted for a few minutes, and the nausea for several hours. The blood concentration taken four hours after the end of drug administration was 8.2 mg. per cent, and seventeen hours later was 3.7 mg. per cent. On April 13 (ninth day) 10 Gm. of sodium sulfapyridine were given intravenously. During the administration of the drug the patient became nauseated and vomited, and toward the end of the injection period, muscular twitchings began, involving the face, neck and upper extremities, later progressing into a generalized convulsion, with extreme cyanosis, and long periods of apnea. He was given coramine and morphine; the convulsion lasted 20 minutes, and the muscular twitchings continued for a period of six hours. The cyanosis gradually disappeared. Blood taken immediately after the termination of the drug injection showed a concentration of 43.5 mg. per cent, and CO_2 combining power of 72 volumes per cent. Four hours later the blood sulfapyridine was 15.7 mg. per cent, and seventeen hours later 9.6 mg. per cent. By the following day the patient had entirely recovered from his drug reaction, except for continued nausea.

A blood culture taken following the second intravenous injection of the drug was sterile, and repeated blood cultures taken twice to three times weekly thereafter (a total of 25) were sterile. On April 14 (tenth day) the rectal administration of sodium sulfapyridine in 5 per cent solution was begun in doses of 20 Gm. daily, divided evenly every six hours. The blood concentration varied from 6.3 to 9.9 mg. per cent. The rectal dose was raised to 24 Gm. daily, and continued for a total of fifteen days. It was discontinued, because of declining blood concentrations, and evidence of rectal irritation. On April 17 (thirteenth day), the fourth day of rectal therapy, the patient developed

fever, the temperature rising to 38.5 C., and an erythematous rash appeared over the entire body, with some edema of the lips. This was considered a definite drug reaction. The rash disappeared in seventy-two hours, but the temperature persisted for one week. Sulfapyridine therapy was discontinued for one day, and potassium chloride was given in doses of 3 Gm. three times daily. On April 25 (twenty-first day) oral administration was combined with rectal administration, and after three days rectal administration was discontinued. Oral doses of 8 to 11 Gm. per day in divided doses at 6 hour intervals were given throughout the remainder of his hospital stay. Under oral administration of the drug, nausea and vomiting were quite variable from day to day, later disappearing entirely, in spite of continued exhibition of the drug.

The patient remained afebrile, and slow improvement, noted after the first two weeks in the hospital, progressed throughout the remainder of his stay. By April 28 (twenty-fourth day), the seventeenth day of therapy, the hemoglobin had fallen to 66 per cent, and the red count to 3,490,000 cells, in spite of three blood transfusions of 500 to 600 cc. each, given during this period. The white count, which on admission was 7,000 cells, varied from 5,000 to 12,300 cells. After six additional transfusions, varying from 250 to 500 cc. each, the hemoglobin rose to 90 per cent, and the red cells to 4,630,000. The hemoglobin fell to 83 per cent, and the red cells to 4,170,000 at the time of discharge. The blood concentrations during oral administration varied from a low of 2.7 mg. per cent to a high of 17 mg. per cent.

The drug was discontinued on June 3 (sixtieth day), after fifty-two days of therapy, and the patient was allowed to be up and around for one week before his discharge home. He improved remarkably in his general feeling of well being; his appetite increased; and he gained 12 pounds in weight. The white count showed remarkable variability throughout his period of improvement, and was 9,400 at the time of discharge. Sedimentation rate, which was 28 mm. per hour on admission, reached normal (9 mm.) on May 9 (thirty-fifth day). It rose during the next 10 days to 12, 14, and 15, but by May 23 (forty-ninth day) it was 11 mm., and remained normal thereafter. We regard the sedimentation rate as one of the most accurate indices of infection.

Serial electrocardiograms showed no

significant changes, except for decrease in P-R interval to .21 sec. Teleroentgenogram revealed a decrease of .5 cm. in the transverse diameter of the heart. The patient was discharged on June 10, 1939 (sixty-seventh day), feeling well. His cardiac findings were unchanged, but the spleen was no longer palpable.

Examination of his immunologic status is of interest. Serial studies of opsonocytophagic power of the blood, agglutinins, and bactericidins were done once weekly throughout his hospital stay. Three control studies, done prior to the beginning of drug therapy, showed minimal phagocytosis, but no agglutinins nor bactericidins were present. By April 21 (seventeenth day) phagocytosis was increased; agglutinins appeared in a serum dilution of 1:40; and bactericidins were present in the undiluted serum. By May 19 (forty-fifth day), thirty-eight days after the beginning of therapy, phagocytosis was complete; agglutinins were present in a serum dilution of 1:5,120; and bactericidin tests revealed complete inhibition of organism growth in a serum dilution of 1:1,000. On June 9 (sixty-sixth day) phagocytosis was still complete; agglutinins were present in a serum dilution of 1:20,480; and bactericidins in a serum dilution of 1:1,500.

The patient returned for examination on July 12, 1939, feeling perfectly well, having gained an additional 10 pounds in weight. Complete physical examination revealed nothing of importance, except for the cardiac findings, which were identical with those at the time of discharge. His blood findings were within normal limits. An electrocardiogram showed evidence of partial heart block, the P-R interval being .23 sec. Immunologic studies revealed phagocytosis diminished, agglutinins present in a serum dilution of 1:5,120, and bactericidins in a serum dilution of 1:1,200. A blood culture showed no growth.

He was seen again on September 15, 1939, three months after discharge, feeling quite well. The routine blood counts, including sedimentation rate, were all normal, and a blood culture was negative.

He returned again on April 26, 1940, having been well, except for a rather prolonged respiratory infection, apparently a common cold, with secondary bronchitis and pleurisy. He had lost 6 pounds in weight, but had had no fever nor chills. He had been doing light work around his farm. There were no

changes in his physical examination. His blood findings were normal, except for sedimentation rate of 20 mm. per hour. X-ray of the chest showed no change over the previous teleroentgenogram. The electrocardiogram was unchanged, except for P-R interval of .24 sec. A blood culture was still negative; phagocytosis was much reduced; agglutinins were present in a serum dilution of 1:640; and bactericidins were absent.

The patient was last seen on June 20, 1940, one full year after discharge, having been entirely well, except for several mild episodes of precordial pain immediately after his previous visit. He had continued doing light work at home. No changes from his previous physical findings were noted. The blood findings were still normal, except for sedimentation rate of 20 mm. per hour. The electrocardiogram was unchanged. A blood culture was sterile. Phagocytosis was complete; agglutinins were present in a serum dilution of 1:5,120, and bactericidins in a serum dilution of 1:1,000.

Discussion

There is no doubt that this patient had *Str. viridans* endocarditis, involving the aortic and possibly the mitral valves of a heart previously damaged by rheumatic fever. The history of recurrent rheumatic fever and the presence of aortic insufficiency seven years previous to his last admission to the hospital formed the clear background for the development of bacterial endocarditis. Bacterial endocarditis was suggested historically by malaise, weight loss, intermittent febrile periods, and pain in the fingertips; and physically by the appearance of chronic illness, fever, petechiae, aortic insufficiency, enlargement of the spleen, leukocytosis, and active sedimentation rate. These findings, together with six consecutive blood cultures positive for *Str. viridans* and the evidence of peripheral embolization, were considered absolutely diagnostic of bacterial endocarditis. Clinical recovery under sodium salicylate therapy was evidenced by general improvement in the patient's condition, gain in weight, the subsidence of fever, leukocytosis, and sedimentation rate, and the appearance of immune antibodies (opsonocytophagic power of the blood, agglutinins, and bactericidins) in the blood. It is particularly important that clinical evidence of recovery has been maintained throughout one full year of frequent complete physical and laboratory examinations.

Two points deserve special emphasis and discussion. First, recovery, initially manifested by the disappearance of the bacteremia, followed the use of large doses of sodium sulfapyridine intravenously (4 to 10 Gm.) wherein an unusually high blood concentration was attained (43.5 mg. per cent), and maintained at a satisfactory level (15.7 mg. per cent after four hours; 9.6 mg. per cent after seventeen hours), for a period of many hours. It can not be stated with any degree of certainty whether or not the patient was cured following the largest intravenous injection (10 Gm.), but recovery was progressive under continued exhibition of the drug rectally and orally. It seems possible from *in vitro* experiments*, using the patient's organism and sodium sulfapyridine, that sufficient bacteriostasis and perhaps bactericidal effect may have been produced by a maintained high blood concentration to enable recovery to follow. Such therapy, however, is obviously dangerous, and certainly inadvisable, except under strict and constant observation.

The second point to be emphasized is that the recovery phase of this patient was accompanied by the appearance of immune antibodies, which increased progressively to reach significantly high levels by the time of discharge. We feel that the determination of these antibodies gives important and supportive evidence of the patient's recovery, when, after initial negativity, they appear in the blood stream and reach a high titre. Such evidence of immunity apparently is maintained over a period of many months. The sharp rise in immune antibodies at the time of his last visit may have been due to antigenic stimulation, caused by a recent respiratory infection.

Conclusion

A case of classical *Str. viridans* endocarditis, involving the aortic, and possibly mitral valves, of a heart previously damaged by rheumatic fever is reported in detail, with particular emphasis upon therapy and immunologic data. Recovery, maintained for a period of one full year, followed the use of sodium sulfapyridine, intravenously, rectally, and orally.

* Unpublished data.

We wish to express our thanks to Dr. David T. Smith for his valuable advice in the treatment of this patient, and to Miss Sara Bunch, of the Department of Biochemistry, who performed the blood sulfapyridine determinations. The drug, sodium sulfapyridine, was very generously supplied to us for experimental use by the Calco Chemical Company of Bound Brook, New Jersey.

SUBTOTAL GASTRECTOMY FOR MEDICALLY TREATED, NON-RESPONDING GASTRIC AND DUODENAL ULCER: WITH PRELIMINARY CASE REPORTS

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The primary treatment for ulcer is medical, and except in an emergency, the patient should have the benefit of a thorough medical treatment before surgery is resorted to. Only about 8 per cent of cases of duodenal and about 23 per cent of cases of gastric ulcer should come to operation⁽¹⁾. Surgery is indicated in those cases in which the medical regimen has failed. Cases with persistent pain, cases that have had two or more gross hemorrhages, cases with perforating ulcers or pyloric obstruction not amenable to medical treatment, and cases of gastric ulcer in which malignancy is suspected should be referred to surgery. There is also in some cases an economic reason for operation.

By subtotal gastric resection I mean the removal of at least two-thirds of the entire stomach. It is upon this, as stressed by Finstrer, that the success of the operation depends.

After observing and talking to quite a number of patients who had had subtotal gastric resection for gastric and duodenal ulcer, months and years before, I became thoroughly convinced that this operation has distinct advantages over gastroenterostomy for the future health and comfort of the patient. Judging from the literature, this conviction seems to be rapidly growing in America.

In 1881 at the University of Vienna, Billroth did the first gastric resection, for carcinoma of the stomach. This was the beginning of successful gastric surgery. Prior to 1906 few gastric resections had been done for ulcer. In 1906 gastric resection for ulcer was done on a fairly large scale in Europe, and in the past few years such operations have been done in steadily increasing numbers in the United States.

Finstrer⁽²⁾, who was Billroth's assistant

Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

1. Lahey: Experiences With Gastrectomy, Total and Subtotal, New England J. of Med., 220:315 (February 23) 1939.
2. Finstrer: Class Lectures, 1936.

during his later years, began resecting for ulcer in 1916. He states that resection of a small portion of the stomach is ineffective, because the hyperacidity is not controlled, and a new ulcer, often gastrojejunal, may be formed.

In the beginning Finstrer used ether anesthesia, and his mortality was 14 per cent. After he adopted local and splanchnic anesthesia his mortality dropped to 3½ per cent. There were fewer deaths from pneumonia and none from so-called "operative shock", which he claims is a progressive weakness from prolonged general anesthesia. He also found that peritonitis was more common following general anesthesia than after local and splanchnic, and it was his opinion that the prolonged ether anesthesia partially destroys the power of the peritoneum to resist infection.

The explanation of the large percentage of failure in gastroenterostomy done for ulcer is: first, that the pathological lesion is left in the body; and second, that hyperacidity, a chief factor in ulcer, is not corrected. Furthermore, with the ulcer left *in situ*, there is danger of perforation, of hemorrhage, of failure to heal, and of malignancy. Approximately 20 per cent of gastric ulcers undergo malignant degeneration, and it is well to bear in mind that there are more deaths from cancer of the stomach than from cancer of any other part of the body. There is also the danger that a vicious cycle will be established—that food will pass through the pylorus, into the duodenum, and back through the gastrojejunostomy into the stomach and out through the pylorus again. The cases which come to autopsy show a highly dilated duodenum and efferent loop and a contracted small afferent loop.

Finstrer reports 90 per cent of cures following gastric resection for ulcer. In Europe cures are reported in 40 per cent of gastroenterostomies for ulcer.

The probable reason for the low mortality reported by some men in gastroenterostomy and the much higher mortality reported in resection is that gastric resections are done only in the severe cases.

After a gastric resection the patient has symptoms of a small stomach for about four months, after which time these symptoms disappear.

Gastrojejunal ulcers occur both after gastroenterostomies and after gastric resec-

tions, but Finstrer's statistics show occurrences in 30 per cent of cases after gastroenterostomy and in only 9.4 per cent after resection.

It is dangerous to operate for a gastrojejunal ulcer, whether following a gastroenterostomy or a gastric resection.

Finstrer⁽³⁾ reports a series of 331 such cases, with a total mortality of 11.7 per cent. Gastric resection for gastrojejunal ulcer following gastroenterostomy shows a lower mortality (6.8 per cent) than when it follows gastric resection (23.5 per cent). Therefore he concludes that a gastric resection is indicated at once if symptoms return in a patient after gastroenterostomy, but it is to be delayed if they return after gastric resection until medical therapy has been given a thorough trial.

From 1928 to 1938, 960 ulcer patients were seen in the Bellevue Clinic⁽⁴⁾. Many of these had previously been operated on and were having a recurrence of symptoms due either to the original ulcer or to complications from the operation. Eighty-eight and four tenths per cent had duodenal ulcer; 11.6 per cent had gastric ulcer. Eleven per cent of the 690 duodenal cases not previously operated on were referred for operation. Persistent and severe pain was the chief indication for operation. In 1933 a review of 106 cases showed that only 24.5 per cent were cured, only 29.2 per cent were improved, and 46.2 per cent were unimproved. Thus nearly one half of the patients subjected to gastroenterostomy had found their conditions unchanged or worse. Of this group 18.8 per cent had definite signs and 7.5 per cent had questionable evidence of gastrojejunal ulcer. As a consequence of the unfortunate results, since 1933 subtotal gastrectomy instead of gastroenterostomy has been done in all chronic duodenal ulcers requiring operation. The mortality in primary resection was 5.1 per cent.

Cutler⁽⁵⁾, reporting a fourteen year period at the Roosevelt Hospital, shows a mortality in gastric resections of 9.3 per cent, which compares favorably with his mortality of 8.5 per cent for gastroenterostomy during the same period. With gastroenterostomy there were late poor results in 16 per cent

3. Finstrer: Results of Repeated Operations on Stomach, J.A.M.A. 112:1871 (May 6) 1939.

4. Hinton and Maier: Chronic Duodenal Ulcer, Ann. Surg. 3:348, March, 1940.

5. Cutler: Treatment of Peptic Ulcer, J. A. M. A. 111:653 (August 13) 1938.

of his cases; with resection, only 3 per cent of his cases had late poor results.

Lewisohn⁽⁶⁾, reporting statistics from the Mount Sinai Hospital, states that 18 per cent of their gastroenterostomies had already been re-operated upon for gastrojejunal ulcer, and another 16 per cent had a return of symptoms, making a total of 34 per cent of cases unsatisfactory. This agrees with statistics from other clinics. Considering this high percentage of unsatisfactory results after gastroenterostomy for ulcer, it seems wise to look for some other surgical approach to those cases in which medical treatment has failed.

Lewisohn also reports a series of gastric analyses done at the Mount Sinai Hospital on a number of patients who had had gastroenterostomy and on an equal number who had had gastric resection for ulcer. Only 4 per cent of the gastroenterostomy cases showed an anacidity, and in the vast majority of cases the postoperative acidity was no lower than before operation. Seventy-five per cent of the resection cases showed free hydrochloric acid below 10. It is interesting to note that eight patients included in this series of cases had been subjected to gastric resection for gastrojejunal ulcers following gastroenterostomy. After the gastric resection all of these cases showed a complete absence of free hydrochloric acid. Before the resection the free hydrochloric acid of these patients varied between 19 and 68. This is a very clear demonstration of how subtotal gastric resection produces anacidity in individuals in whom gastroenterostomy had failed to do so.

Jura⁽⁷⁾ reports on the blood picture of 20 patients following gastric resection. He found that the red blood cells and the hemoglobin are diminished during the first two weeks following resection, after which they slowly increase to almost normal. He believes that the diminution of red cells and hemoglobin after resection is due to lack of the intrinsic factor of Castle in the gastric secretion and to the diminished capacity of the remaining portion of the digestive tract to absorb iron. He further believes that the slow but progressive increase of red cells and of hemoglobin is due to vicarious hematopoietic function of the digestive tract, especially of the duodenum and the small intestine.

He states that the improvement of the blood picture after gastric resection is spontaneous. His patients did not receive any treatment for control of anemia. It is advisable, however, to institute certain medical measures after resection to aid in a quicker and better absorption of iron by the body and to stimulate the anti-anemic reaction of the remaining segments of the digestive tract.

What about the motor functions of the stomach after gastric resection? In a paper published in 1940⁽⁸⁾, Vitkin discusses 74 patients who had had gastrectomies between 1930 and 1936. His conclusions were as follows: (1) As a rule the stomach after subtotal gastrectomy shows a rhythmic evacuation. (2) At present there are no data which would substantiate the belief that a sphincter is formed in the anastomotic region after gastrectomy, and he considers the formation of such a sphincter quite impossible. He claims that the periodic closure and opening of the anastomosis is due to peristaltic contractions and distentions of the efferent intestinal loop nearest to the anastomosis. (3) Gastric tone after partial gastrectomy becomes normal in time; and a stomach which was hypotonic or atonic at the time of operation becomes normal in tone following gastrectomy. (4) Spasms of the anastomosis after gastrectomy undertaken for cancer present an early symptoms of the recurrence of cancer in the region of the anastomosis. (5) After gastrectomy most patients exhibit a hyperplastic gastritis and a chronic jejunitis without any clinical manifestations. (6) Normal evacuation of the stomach is resumed after gastric resection.

Technique of Operation

In discussing the technique of operation it will be important to emphasize a few *don'ts*. Don't use clamps where it is possible to do without them; clamps traumatize all layers of the stomach and intestine and lead to complications such as hemorrhage, separation of the suture line, leakage, delayed healing, and marginal ulcers. Where it is imperative to use a clamp, use one which exerts as little pressure as possible to make your technique safe. Don't have undue tension on the suture line. This invites poor healing, slough, leakage, peritonitis, and death. Don't make a jejunojejunostomy in connection with your

6. Lewisohn: Problems in the Surgical Treatment of Chronic Duodenal Ulcer, *Ann. Surg.* 3:355, March, 1940.

7. Jura: Erythrocytosis After Gastric Resection in Duodenal Ulcer, *J.A.M.A.* 110:937 (March 10) 1938.

8. Vitkin: Motor Functions of the Stomach After Resection, *Ann. Surg.* 3:27, January, 1940.

gastric resection, because: (1) satisfactory function is obtained without it; (2) it is an additional technical step, time-consuming in character, with an added risk of leakage; and (3) in subtotal gastrectomy for ulcer, a jejunojejunostomy is physiologically undesirable, because a large portion of the alkaline jejunal contents are thus side-tracked below the stomach and do not return to the stomach to accomplish acid neutralization. Don't use non-absorbable suture material on the mucosa; it predisposes to marginal ulcer. Don't use the Billroth I operation; there is too much tension on the suture line, and two tubes of different calibres are anastomosed. Probably the best type of operation for subtotal gastric resection is Finstrer's modification of the Billroth II.

Case Reports

While these cases are too few and too recent for any definite and permanent conclusions to be drawn from them, I thought they might be of interest in connection with this paper.

Case 1. A. S., a white male aged 35, was admitted to the hospital on April 30, 1939. His chief complaint was pain in the upper abdomen for the past sixteen years, which came about two hours after meals and was usually followed by vomiting. Temporary relief was obtained by food or milk. The patient was in the hospital for the same condition five years ago, but had been no better since. The patient was a tall slender male. On examination some tenderness was found in the epigastrium. A gastric analysis showed the fasting free hydrochloric acid to be 0, the total acidity 10. After an Ewald meal the free hydrochloric acid was 53, the total acidity 75. The Kahn test was negative. There were 5,480,000 red blood cells, and the hemoglobin was 88 per cent. The x-ray showed the stomach to be normal in size and contour; the pylorus and duodenum were well drawn up into the region of the gall bladder. There was marked irregularity of the duodenal cap caused by adhesions, probably an old duodenal ulcer. The x-ray report made five years previously read: "The duodenum was well visualized, and showed a persistent deformity, of the cap, which could not be filled out by palpation, probably a duodenal ulcer."

On May 20, 1939, under pontocaine spinal anesthesia the patient was operated upon.

There was found a prepyloric ulcer with an indurated area of about 1 inch around it, and a duodenal ulcer on the posterior wall of the duodenum near the pylorus. A subtotal gastric resection was done. The abdomen was closed in layers without drainage. On the fifth postoperative day the patient had more fever than was to be expected. This was explained by the development of a subphrenic abscess, which was opened and drained nine days later. The temperature fell to normal on the day following this operation, and remained so until the patient's discharge from the hospital, when he was in good condition.

On April 3, 1940, ten and one-half months after operation, the patient could eat a full diet without any pain whatsoever. He stated that he had had no pain since leaving the hospital. He eats only three regular meals a day, and weighs 153 pounds—1 pound more than he ever weighed in his life, and 16 pounds more than he weighed at the time of operation. He had not received any anti-anemic treatment since leaving the hospital; yet his red cell count was 5,280,000, and his hemoglobin was 98 per cent. A gastric analysis was done. The fasting specimen showed free hydrochloric acid 0, total acidity 20. After an Ewald meal, the free hydrochloric acid was 20, the total acidity 40. The patient is doing regular farm work.

Case 2. J. M. A., a male aged 39, was admitted to the hospital on December 4, 1939, as an emergency case. He had had severe epigastric pain, nausea and vomiting for the past seventy-two hours, and had vomited some blood three times. For four years he had had a burning in the epigastrium, which was relieved temporarily by food, soda, and milk. He gave a history of having tarry stools and having lost weight. He was acutely ill, in severe pain, with tenderness in the epigastrium. A diagnosis of gastric ulcer with hemorrhage was made. He was given enough morphine to keep him quiet. On the fifth day after admission a gastro-intestinal series was done which revealed on the lesser curvature of the stomach an unusually large niche, anterior to which was a marked filling defect. This was interpreted as a large gastric ulcer with a suggestion of malignant degeneration. On the eighth day after admission the red cell count was 5,000,000, the hemoglobin 98 per cent. On the tenth day after admission a subtotal gastric resection was done. A huge gastric

ulcer had extended through all layers of the stomach, and the posterior wall of the stomach was adherent to the pancreas. Resection by Finstrer's modification of the Billroth II method was done. The abdomen was closed without drainage. Pathological examination showed a non-malignant ulcer and non-malignant glands removed from the lesser curvature. The patient's temperature came to normal on the second postoperative day, and remained there. His convalescence was entirely uneventful. He was up in a chair on the fourteenth day, and was discharged on the twenty-first postoperative day. Three months later he looked well, and said he was feeling fine, eating anything he wanted to, and had had no pain in his stomach since the first two or three days after his operation.

Case 3. T. P. R., aged 40, a male, was admitted to the hospital on March 27, 1939. His chief complaint was pain in the epigastrium, vomiting and belching. Fifteen months previously he had had an operation for perforated gastric ulcer; the perforation was closed. He got along fairly well for the first five months after operation, but for the past ten months he had had much pain in his stomach, had vomited frequently, and had lost 36 pounds in weight. He had not vomited blood.

The urine contained albumin (1 plus), a few granular casts, and a few white blood cells. The Kahn test was negative. The red cell count was 5,650,000, the hemoglobin 90 per cent. A gastric analysis, fasting specimen, showed free hydrochloric acid 10 per cent, total acidity 45 per cent. After an Ewald meal the free hydrochloric acid was 40 per cent, the total acidity 67 per cent. The x-ray report was as follows: "The stomach is low, and of increased capacity; peristalsis is very active. The duodenal cap shows a filling defect. At the duodenal junction on the inner side is a small niche, which is persistent, showing a perforating ulcer. A six hour film shows a large amount of gastric retention." The facts of increased peristalsis, marked gastric retention, and persistent vomiting over a period of ten months would point strongly toward pyloric obstruction, and the operation for perforated ulcer fifteen months previously made it almost conclusive. Under pontocaine spinal anesthesia a subtotal gastric resection was done. A prepyloric ulcer was found, with an enormous amount

of induration, and pyloric obstruction. The abdomen was closed without drainage. The patient made an uneventful recovery.

Microscopic examination showed an acute ulcer superimposed upon an old chronic one. There was no evidence of malignancy. A year later the patient had gained 36 pounds, was back at work, and was eating anything he wanted with no pain.

Summary

1. Peptic ulcer is primarily a medical disease.

2. A certain percentage of ulcers are refractory to medical treatment, and they become surgical cases.

3. Gastroenterostomy for ulcer has been very disappointing as regards permanency of cure.

4. Subtotal gastric resection is the best surgical method at our disposal. It reduces the acidity, relieves the patient of many years of suffering, protects him against the serious complications of perforation and hemorrhage, and effects a permanent cure in about 90 per cent of cases.

5. The success of resection as a permanent cure depends upon the removal of a large portion of the stomach, which produces a very low acidity and removes the pathological lesion from the body.

6. The best type of operation is Finstrer's modification of the Billroth II, under local or spinal anesthesia.

Abstract of Discussion

Dr. R. L. Pittman (Fayetteville): While I agree with much of what Dr. Benbow says, at the same time I feel that we enjoy that thing we call our stomach a great deal and we don't like to be separated from too much of it at one time.

I would like to defend, to some extent, the gastroenterostomy as performed today by a great many men. I feel that it relieves a great many of these cases, and certainly the mortality is not as high as for gastrectomy.

I have performed gastrectomies only in obstructive conditions of the pylorus involving extensive ulcers, in possible early malignancy, and in one particular type of ulcer—that is, ulcer on the lesser curve of the stomach in a young person who has, over a long period of time, failed to respond to medical treatment. In those patients, I do feel we get better results by complete resection of the ulcer with a portion of the stomach from the lesser curvature to the greater curvature. The motor activity of the stomach seems to be better than when the ulcer is excised and a gastroenterostomy done.

For a general rule, excision of the stomach, or of a considerable portion of it, seems to me to be a rather extensive operation for ulcer of the stomach. However, I am willing to accept Dr. Benbow's evidence as he so ably presented it. I enjoyed his paper and appreciated it very much.

Chairman Rose: Is there further discussion of Dr. Benbow's paper?

Since there is not, Dr. Benbow, we will ask you to close the paper.

Dr. E. V. Benbow: With regard to the mortality of subtotal gastrectomy, it runs very little higher, if any, than that of gastroenterostomy. The reason some people have a high mortality in the resection cases is that they don't do a gastric resection until a man is at death's door. If they will do resections on those same cases that they now do gastroenterostomies on, the mortality will be very little higher.

In general, the mortality is not over 5 per cent. Cutler reports a mortality of 9.3 per cent in his gastric resections. He also reports 8.5 per cent for gastroenterostomy, so they run pretty close. They both run a little high, but you can figure on about a 5 per cent mortality if you take the run of cases which come to you.

COMMON COMPLICATIONS OF PREGNANCY

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It is impossible in a rather limited time to discuss in detail such a broad topic as "Complications of Pregnancy." This paper will not deal with the rare conditions, but will be confined to the common complications which the general practitioner frequently encounters. However, any physician who undertakes the care of maternity cases should remember that every case which he accepts is potentially subject to any of the complications of pregnancy.

Prophylaxis, of course, is of first importance. Unfortunately, many of the complications of pregnancy are at present unpreventable, however, much can be done if one keeps in mind the most probable complications during the various stages of pregnancy, and, should they appear, treats them from their very onset.

Usually the first and most common complication of pregnancy is vomiting. The cause of this is still unknown. It has been classified into reflex, neurotic and toxic types. The reflex theory will be dismissed by stating that local irritative conditions have proved to be coincidental rather than causative. Williams and his group at Hopkins have long held that a large percentage of these cases are neurotic or psychic in origin. Some cases certainly seem to fall in this group. At the present time, however, the

vast majority of writers on the subject agree that some form of toxemia causes the vomiting of pregnancy. Until more is learned about this toxemia, we can only treat the effects of the vomiting—acidosis, dehydration, etc.—rather than the vomiting itself. Fortunately, most of these cases are mild and can be controlled by a high carbohydrate diet and the use of sedatives an hour or so before eating. Chloral hydrate exerts a local anesthetic action on the gastric mucosa, and is probably more efficacious in this condition than the bromides or barbiturates. Rest is of value, especially at the time the patient is nauseated. Proper bowel function should not be forgotten, and here the diet also plays an important part. When fruits, especially prunes, fail to accomplish this, the combination of mineral oil and cascara, or some other mild laxative should be resorted to. In the more severe cases bed rest is essential. Sedatives should be increased and preferably given per rectum, with the elimination of all oral intake. When such becomes necessary large amounts of glucose should be given intravenously, with one-half unit of insulin for each gram of glucose. The hypodermic or intravenous administration of an ampule of corpus luteum once or twice daily seems to help most of these cases, although some prominent obstetricians still question the value of its use.

In those cases which appear to be psychic or neurotic in origin the introduction of the duodenal tube and the feeding of liquids through this tube will prove beneficial.

If, after three to six days of intensive treatment, a severe case does not improve, therapeutic abortion is indicated, especially if there is fever, a rapid pulse or jaundice.

Vaginal bleeding is a frequent complication of pregnancy during the first trimester. It may be physiological, but it is more often the first symptom of an ectopic pregnancy or an abortion. Occasionally the first symptoms of a ruptured ectopic pregnancy are rather dramatic, with pain, shock, and fainting. It rarely has a rapidly fatal termination. More often, however, the pain is less severe, with slight atypical vaginal bleeding and dizziness, followed by a pelvic discomfort. In a few days there is another attack of pain and dizziness, or perhaps fainting due to internal bleeding. This bleeding from the ruptured tube is usually continuous, but it is rarely so severe that the patient's life is in immediate danger. At this time, or

soon afterwards, pain may be referred to the shoulder girdle or rectum. Usually when there is a pint or more of blood in the abdomen shifting dullness can be demonstrated by percussion over the lower abdomen. When there is slow bleeding from the ruptured tube the blood coagulates in that region of the cul-de-sac, and in such cases a pelvic mass can usually be felt on careful bimanual examination. An extremely tender cervix is a valuable point in the diagnosis of a ruptured tube when acute salpingitis can be eliminated. Sedimentation rates and blood counts may be the same in the two conditions, but the examination of smears taken from the cervix and Skene's ducts will usually clarify the situation.

An early abortion must also be considered in the differential diagnosis of ruptured tubal pregnancy with vaginal bleeding. When vaginal examination fails to establish the diagnosis a curettage may be necessary. But one must remember that a tubal pregnancy and a uterine pregnancy may occur at the same time, 294 such cases having been reported in the literature to date⁽¹⁾. Two such cases have occurred in the Lowrance Hospital during the past five years, and these have not been reported.

The treatment of tubal pregnancy with rupture or abortion is of course surgical.

The most common major complication of pregnancy is no doubt abortion. It has been estimated that one out of every three or four pregnancies terminates in abortion. Quite a few of these are criminally induced. The other causative factors are numerous, and in many cases it is impossible to find the cause. Locally, lesions such as fibroids or endometritis may be blamed. A diseased cervix, a retrodisplaced uterus or an ovarian cyst will occasionally be a factor. Trauma is frequently held responsible, but seldom does it seem to be the sole or chief cause. In many instances the embryo has not developed properly. Debilitating diseases, especially the chronic ones, account for their share. Endocrine deficiencies no doubt play a definite role; this is particularly true as regards hypothyroidism. Vitamin E deficiency no doubt plays a definite part in many spontaneous abortions.

The symptoms of abortion are vaginal bleeding, which may be alarming if the pregnancy has advanced to three months or more; and pains in the lower abdomen and

back, with history of amenorrhea. With this history, our first considerations should be whether it is spontaneous or induced, threatened or inevitable, complete or incomplete, aseptic or septic. When the type is determined, treatment must be instituted accordingly. In threatened abortion the rule should be absolute rest in bed three or four days after all pain and bleeding have ceased. Progesterone and morphine should be given to allay all uterine contractions and to keep the patient quiet. Wheat germ oil, which has proved so valuable in habitual abortion, should be given in large doses. No vaginal examination should be made unless abortion appears to be inevitable, as indicated by hemorrhage. In the inevitable aseptic cases with hemorrhage and in the clean incomplete cases, curettage should be done under the most rigid aseptic precautions, remembering always that the pregnant uterus is easily punctured with sound or curette. An ampule of pituitrin injected deeply into the cervix at the beginning of any intra-uterine manipulation will lessen the danger of perforation and of hemorrhage.

In the treatment of septic or infected abortion sound judgment is required. If the infection seems to be severe and is comparatively recent in origin, conservatism is indicated. All text books warn against interference until the temperature has been normal three to five days. However, if the cervix is open and the contents are readily accessible, experience has proved it practicable and safe to evacuate gently the intra-uterine contents; and here the fingers are safer than any instrument.

Sulfanilamide and repeated small blood transfusions are of course indicated in practically all cases of septic abortion.

A few words should be said about tuberculosis complicated by pregnancy, for in recent years there has been a change in the method of handling these cases. Pregnancy in tuberculosis is not an infrequent occurrence, since the incidence of tuberculosis in women is highest during the childbearing age. It was formerly taught that abortion should be done on all pregnant women with active tuberculosis. This therapeutic measure was based on empirical knowledge, and not on the information that is now available. Recent investigators, in reviewing more than 30,000 cases⁽²⁾ could find no case of pulmonary tuberculosis which proved to be ag-

1. Bernstein, Abraham, in *Am. J. Surg.*, March, 1940.

2. Buford, C. F., and others, in *J. Missouri M. A.* 36:108-118, March, 1939.

gravated by pregnancy. Of course proper obstetrical care, with the continued treatment of the tuberculosis, is indicated. The reasons why tuberculosis patients do well during gestation are:

1. All the physiological processes function at their best during pregnancy.

2. As the size of the gravid uterus gradually increases, the intra-abdominal pressure is increased. This in turn results in the splinting of the diaphragm together with an elevation. As a result favorable changes in the size and contour of the chest take place. After labor, however, when the diaphragm suddenly descends and expands the lungs again, there is danger of reactivating this relatively quiescent tuberculous process. This effect can be adequately modified or prevented by artificial pneumothorax, pneumoperitoneum or a phrenic operation immediately following labor.

Another significant complication of pregnancy is pyelitis. Though it occurs in only about 4 per cent of all pregnant women, it often results in permanently damaged kidneys. The degree of the damage is proportional to the severity and duration of the infection. True uncomplicated pyelitis seldom exists; it is practically always a pyelonephritis. The diagnosis of this condition is usually easy, but occasionally with a blocked ureter, catheterization of the ureter is essential to arrive at the true cause of the fever, which may or may not be associated with chills. Urinary symptoms and pain over the lumbar region are usually, but not always present. The treatment consists of rest in bed, plenty of fluids, free elimination, a light diet and the use of knee-chest position (if possible) two or three times daily. Urinary antiseptics are very helpful, but only when there is function and fairly adequate drainage from the involved kidney. When possible the causative organism should be isolated and identified by culture. Only in this way will the patient derive the maximum benefit from the newer and more potent urinary antiseptics. We are hardly justified in using the trial and error method of finding out which of the urinary antiseptics will be more effective. Urotropin with acid, however, may be given from the beginning. It is inexpensive and often effective. When practical and convenient, cystoscopy with ureteral catheterization should be done. Carefully performed, this procedure should not be feared as a possible cause of abortion. In the milder cases

the pelves are usually irrigated and the catheters withdrawn. In the more severe cases it is better to leave the catheters in for twenty-four hours and irrigate every three or four hours. In chronic or recurrent cases of pyelitis the preparation and administration of an autogenous vaccine will occasionally result in a cure when all other therapeutic measures have failed. In rare instances, however, when careful and intensive treatment fails, therapeutic abortion must be performed.

Appendicitis may be a rather serious complication of pregnancy. Fortunately more than 80 per cent of the reported cases occurred during the first six months of pregnancy when diagnosis and treatment presents less difficulty. The symptoms of appendicitis occurring during the first trimester are comparable to those occurring in the non-pregnant woman. It must be remembered that as the uterus enlarges there is a gradual upward displacement of the cecum and appendix, so that they may eventually lie under the liver. Leukocytosis is a variable manifestation of uncomplicated pregnancy, and is therefore an unreliable index to the degree of inflammation of the appendix during pregnancy. The thinning of the abdominal musculature during the latter part of pregnancy makes rigidity a less reliable sign. This thinning of the abdominal wall does, however, make tenderness more significant, and the diagnosis is best made by this one sign.

The only rational treatment of acute appendicitis with pregnancy is appendectomy. Other conditions such as ectopic gestation and twisted adnexal tumors may be confusing, but these also require operation. Postoperatively, adequate doses of morphine should always be given to forestall labor when any inflammation has spread beyond the appendix. Postoperative labor has little or no effect on the healing of the well sutured McBurney incision.

The association of heart disease and pregnancy may present a serious situation. Pregnancy certainly increases the work of the heart, and during the last trimester this increase is estimated to be around 50 per cent. Only in this way, however, does pregnancy affect the diseased heart. No one has ever been able to demonstrate that pregnancy itself is able to cause any exacerbation of rheumatic heart disease. Therefore, as a rule, it is safe to say that if a patient

feels no cardiac embarrassment while doing light work, however loud or rough the murmur may be, pregnancy will not impose serious trouble if she follows adequate rules for care during pregnancy. Her activities should be adjusted to her capacity; and infection, especially colds, should be treated with the greatest of care. However, should decompensation occur during late pregnancy a real risk may be encountered during labor. If such cases do not respond to treatment interruption should be seriously considered. If the patient seems to have strength to stand delivery from below, this is preferable; but the use of forceps to aid her is definitely indicated. If decompensation does not improve under treatment, or becomes worse, cesarean section under local anesthesia probably offers her the best chance.

During the last trimester of pregnancy hemorrhage offers the most formidable of all the complications of the gestational period, and must be treated with precision and promptness. One should not only check bleeding but should prevent later complications such as shock and infection. Placenta previa and premature separation of the normally implanted placenta may occur at any time during the last trimester. Placenta previa is diagnosed by the sudden onset of painless vaginal bleeding, seemingly without cause. The initial attack of bleeding is rarely fatal. The shock is in proportion to the amount of visible blood lost. It is difficult at times to determine the type of placenta previa, whether it is lateral, marginal, or central. Especially is this true with an undilated or partially dilated cervix. Vaginal examination in such cases is a hazardous undertaking unless done under the most rigid aseptic precautions. Be prepared before any examination to combat hemorrhage by packing or by immediate cesarean section. Have the patient typed for transfusion and have the donors immediately available. At the present time cesarean section is the best method of procedure, and as a rule should be done as soon as the diagnosis of placenta previa is made. Occasionally, in a multiparous woman with slight bleeding and dilated or dilatable cervix, rupture of the membranes with or without insertion of a hydrostatic bag will suffice. Also in an occasional case when the baby is small and the cervix is soft and somewhat dilated, an immediate version will be necessary and preferable to a section. A Braxton Hicks version is not indicated if the baby is

alive, but may be done if the fetus is dead and the cervix half dilated. It is well to keep in mind that any intra-uterine manipulation increases the blood loss, shock and infection. There is also danger of rupturing the lower uterine segment if version is attempted.

Premature separation of the normally implanted placenta is a dangerous condition. At times it is seen during labor, and it is frequently not suspected until the patient is in shock. If the onset is during labor the only symptom may be expulsion of small clots during pains. The onset of most cases is rather sudden, with constant labor-like pains, fading fetal heart sounds, and board-like rigidity of the uterus, with or without visible hemorrhage. Some degree of shock is usually present, and is out of proportion to the visible blood lost. There is usually a history of some recent trauma, and often a history of toxemia. One should especially be concerned if there is a history of nephritis. In such cases anuria and uremia are likely to occur, and early treatment should be instituted to combat these.

The treatment of premature separation is immediate delivery by cesarean section, in practically all cases except those in which the separation occurs late in the first stage of labor. In these cases simple rupture of the membranes and prompt delivery is sufficient. If the fetus in the second stage of labor is in distress, as evidenced by the fetal heart rate, version may save the baby and the mother. Premature separation before the onset of labor, or early in the first stage, may mean the loss of the baby and probably the loss of the mother, or may necessitate the removal of the uterus because of the infiltration of blood into the uterine wall with the loss of contractility and subsequent postpartum hemorrhage. If premature separation of the placenta is recognized early the maternal mortality should be slight; however, if treatment is not begun until late, many patients will die despite the best treatment that is at present available.

The so-called late toxemias of pregnancy are the most thoroughly investigated but probably the least understood of all the complications of pregnancy. There is still no unanimity of opinion as to the classification of these toxemias. In a workable classification the so-called toxemias may be divided into the acute, non-convulsive (pre-eclamptic) and the convulsive (eclamptic) toxemi-

as. The entire syndrome develops in the course of pregnancy, and is distinct from the chronic cardiovascular-renal conditions with which the woman was affected prior to the pregnancy.

In recent literature there have been many hypotheses as to the cause of the toxemias of late pregnancy. None are generally acceptable, and they will not be discussed. We do know that in eclampsia and pre-eclampsia, angiospasm is a common pathogenic factor underlying all the varying expressions of eclampsia. This vascular manifestation is at first functional, but if it lasts too long the small vessel walls become thick and sclerotic. This occurs not only in the kidneys, but in the liver, brain and other organs as well.

From various statistics it appears that clinical evidence of pre-eclampsia occurs in about 10 per cent of the child-bearing population at large. With treatment, however, not more than 2 or 3 per cent of these will have eclampsia.

It is sometimes difficult to distinguish between pre-existing chronic general vascular sclerosis, or chronic nephritis, which may complicate pregnancy, and the acute toxemias which make their appearance in the latter months of pregnancy. A non-pregnant woman may have mild chronic nephritis, and yet all the blood examinations and kidney function tests will be normal. Should such a woman become pregnant, she will show hypertension and albuminuria before the third trimester; whereas acute toxemia rarely manifests itself before the seventh month. In this time element lies a reliable and practicable means of differentiating between the two conditions. It is unfortunate that mild chronic nephritis cannot always be diagnosed before the onset of pregnancy—not even by the technical urea clearance test and the Addis count.

Treatment: Those patients who exhibit no symptoms of nephritis or hypertensive disease before pregnancy, but who in early pregnancy exhibit a mild degree of hypertension (around 140 systolic and 90 diastolic), who have at most a trace of albumin, and whose renal function is within normal limits, may be treated expectantly; however, there is danger that the existing condition will be aggravated by superimposed toxemia.

A woman who shows more hypertension and more albumin during the early months of pregnancy may be carried on to term, but irreparable damage to her kidneys, with

shortening of her life, is to be expected. Kuder and Stander⁽³⁾ found that more than 40 per cent of women died within ten years after chronic nephritis was first recognized in the course of pregnancy. It appears, therefore, that if the disease is manifest at conception, abortion should be done promptly. If the disorder has been latent and appears early in pregnancy and is associated with considerable albuminuria which tends to increase despite treatment, it is unlikely that pregnancy can terminate successfully. If to albuminuria is added edema or hypertension the pregnancy should be terminated without delay.

The treatment of pre-eclampsia is at present more effective than formerly. It consists essentially in adequate elimination, mild sedation, bed rest and dietary restrictions. Sodium chloride should be cut down to a minimum, and only vegetable and milk proteins should be allowed. For the milder cases the diet may consist of skimmed milk, fruits, vegetables and salads; for the more severe cases only sweet fruit juices should be allowed. McIlroy⁽⁴⁾ and other British obstetricians gave as their opinion that a diet sufficient in vitamins, especially vitamin D, and inorganic constituents, such as calcium, iron and iodine, is vital in preventing and treating pre-eclampsia. All agree that high carbohydrate diet, including if necessary frequent intravenous injections of hypertonic glucose and the administration of magnesium sulphate intravenously to the severely sick patients, give excellent results. However, if treatment fails to cause improvement, termination of the pregnancy is indicated. To induce labor in these cases conservative methods are preferable to cesarean section.

Despite adequate prenatal care and every known method of treatment of pre-eclampsia, true eclampsia may occur and may be fatal. Eclamptic convulsions present an immediate emergency which calls for active but not radical treatment. Therapy should be instituted to control the convulsions and to relieve the edema and promote diuresis. Here hypertonic glucose, frequently administered, has its greatest usefulness. It not only dehydrates but protects the liver and prevents the development of dangerous acidosis. For the purposes of sedation, morphine, chloral hydrate, and the barbiturates have all proved effective. The intravenous use of magnesium

3. Kuder, K., and Stander, H. J., in *New York State J. Med.* 34:5, 1936.

4. McIlroy, L., in *Lancet*, 2:291, 1934.

sulphate is an important part of the conservative treatment of eclampsia. In addition to its sedative effect it relieves edema and promotes diuresis. McNeille⁽⁵⁾ has given 20 cc. of a 10 per cent solution intravenously every hour for as many as six doses with excellent results. It is the consensus of opinion, however, that this drug should be given with caution when oliguria or anuria is present.

Current writers seem to have little favor for venesection as a treatment of eclampsia. However, should pulmonary edema develop, venesection, atropine and oxygen should be employed—as well as 50 per cent glucose intravenously.

As to the termination of pregnancy in the eclamptic patient experience has shown that all methods of delivery are inadvisable until the convulsions have been controlled. Even then forceful mechanical means of emptying the uterus should be avoided when possible. Plass⁽⁶⁾ in a collective review, found the mortality following radical treatment of eclampsia to be 21.7 per cent of 4,607 cases and only 11.1 per cent of 5,976 cases in which treatment was conservative.

Summary

Only the more frequent and more significant complications of pregnancy have been discussed. These include vomiting of pregnancy, tubal pregnancy, abortion, pyelitis, heart disease in pregnancy, placenta previa, premature separation of the placenta, and the late toxemias of pregnancy. It should be noted that the trend is more and more toward keeping the pregnant woman in a state of physiological equilibrium by encouraging the use of a high vitamin diet and one which contains the essential inorganic constituents. This appears to lessen the incidence of many of these complications, or at least to lessen their severity. The active treatment of such complications is directed not only toward eradicating the complication itself, but always toward keeping the physiological processes as near to the normal state as possible. Much progress has been achieved in both the prevention and treatment of the complications of pregnancy, but vast strides are yet to be made before any pregnant woman can be assured that on the expected date of confinement she will have a live baby and that everything will go well.

5. McNeille, L. G., in J.A.M.A. 103:548, 1934.

6. Plass, quoted by Dieckman, W. J., and Michel, H. L., in Arch. Int. Med. 55:420, 1935.

TUMOR OF THE ACOUSTIC NERVE

With Case Report

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Tumors originating from the acoustic nerve are neither rare nor unusual. The case we are reporting has several unusual points. Most of the tumors of this group occur in individuals under 50 years of age. Our patient was 71. In the differential diagnosis we had to consider senile arteriosclerosis—the cerebral condition which can simulate almost any organic brain lesion. We begin by frankly admitting that we missed the diagnosis. The second thing of interest was the unusually high protein content of the spinal fluid. The figures as given by Merritt and Fremont-Smith⁽¹⁾ are from 150 mg. to a top normal of 500 mg. per 100 cc. With the kind permission of Dr. Merritt, and the W. B. Saunders Co., we are reproducing a chart showing the protein content of the lumbar cerebrospinal fluid in 182 cases of cerebral tumor (fig. 1).

Case Report

Mr. L. L. C., aged 71, a white male, was first seen on May 8, 1939, complaining of pain in his legs and weakness. From the histories obtained by the different consultants, it was apparent that this man had definite mental deterioration. The history varies in each instance, but it seemed from his statements that about two years previously he began to develop marked unsteadiness on bending forward. About that same time he noticed tinnitus in both ears and an occasional stumbling in his gait. He also noticed that his hearing was progressively becoming worse; this impairment was slightly more pronounced on the right than on the left. There had been rather rapid loss in hearing during the last two months. Approximately one month previously he noticed a weak and trembling feeling in his legs, some increased unsteadiness in his gait, and

NOTE: The photomicrographs appearing in this article were made by the U. S. Army Medical Museum, Washington, D. C.

1. Merritt, H. Houston, and Fremont-Smith, Frank: The Cerebrospinal Fluid, Philadelphia, W. B. Saunders Co., 1937, p. 162.

Location & Type of Tumor	Lumbar cerebrospinal fluid content (mg. per 100 cc.)					Total
	Under 45	45-100	100-200	200-500	500-1500	
Supratentorial						
Glioma of cerebral hemisphere	23	27	15	5	1	71
Glioma of third ventricle	0	1	0	1	1	3
Glioma of corpus callosum	0	4	0	3	0	7
Meningioma	4	7	4	0	0	15
Metastatic and other tumors of cerebrum	10	15	5	2	0	32
Pituitary and suprasellar tumor	2	3	0	0	0	5
Subtentorial						
Acoustic neuroma	0	2	3	11	0	16
Other cerebellopontine angle tumors	2	1	2	1	0	6
Glioma of cerebellum or fourth ventricle	12	7	3	1	0	23
Glioma of brain stem	3	2	0	1	0	6
Total	56	67	32	25	2	182
Per Cent	31	37	17	14	1	100

Fig. 1. The protein content of the lumbar cerebrospinal fluid in 182 cases of cerebral tumor.

a tendency to fall. If he stopped suddenly while walking—especially while walking rapidly—he would fall forward. He had been having some cramps in the calves of his legs. He had also noticed noises in his head, which he described as bell-like or like the roaring of a train. There was no history of diplopia, nausea, or vomiting. In fact, except for “constipation” and “prostate trouble”, the rest of the history was negative. The patient denied all venereal diseases.

Physical examination showed a blood pressure in each arm of 155/95. The skin was rough, due to an ichthyosis. The pupils were small, but reacted normally to light. There was some irritation of the conjunctiva of the right eye. Ocular movements were normal. Hearing was somewhat reduced in both ears. All teeth had been removed except one above and six below. The tongue was moderately coated and was protruded in the midline. The tonsils were small, with red pillars. There was no adenopathy nor abnormal pulsations in the neck. The veins of the neck were rather full, especially on the left side. Chest expansion was fair and equal. The percussion note was normal throughout. The diaphragm moved normally; no rales or frictions were heard; breath sounds were vesicular. The supracardiac dullness in the second interspace was 3.5 cm., and in the third interspace was 4.5 cm. The left border of the heart was 10.5 cm., and the right border was 3 cm. The heart rate was regular, 84. There was a systolic murmur heard at the apex. This was not transmitted. The abdomen was soft, and the wall relaxed and thin. There was some weakness in both inguinal rings. Peristalsis was visible. There was no tenderness noted. Rectal examination revealed a prolapse of a small amount of rectal mucosa.

The rectum was empty. The left lobe of the prostate was hard and encroached somewhat on the midline. *Extremities*—station was slightly unsteady. The gait was definitely unsteady. He walked with a wide base, and when he walked fast he tended to fall forward. The fingernails were somewhat curved. There was slight tremor of the hands. Biceps and triceps tendon reflexes were present and slightly hyperactive. Babinski was negative on the right and showed no response on the left. The sense of position seemed to be intact. The finger-to-nose test was fairly well performed. Touch sensation seemed to be slightly reduced over the lower extremities.

A neurosurgical consultation was held on May 21, 1939. The following report was made: “Impression: If the very high total protein estimation is disregarded momentarily, the diagnosis appears to be that of cerebral arteriosclerosis with the involvement of both vestibular apparatus. The fact that there is no involvement of other cranial nerves adjacent to the eighth and no papilloedema, lateral cerebellar signs, or subjective symptoms rules out an angle tumor. The high total protein estimation may be due to a hemorrhage which was not recognized in the first lumbar puncture. The patient’s rapid return to normal, or at least improvement under rest is also against the diagnosis of a tumor. Considering the relatively low blood pressure with arteriosclerosis, the use of benzedrine might be helpful in controlling his subjective signs.”

Ophthalmological consultation on May 22, 1939, was reported as follows: “Optic nerves were normal in appearance. Peripheral fundi were normal. Visual fields showed slight and concentric contraction. The contraction was probably due to inattention and no real pathology. The pupils were regular and equal, reacted to light and accommodation. Extra-ocular movements were normal and coordinated. There was no ptosis and no nystagmus at the time of examination. Corneal reflex on the right side was slightly diminished. Fifth nerve was otherwise normal; seventh intact on each side. Eighth nerve: an audiogram showed a marked loss of hearing in each ear, more pronounced on the right. The technician reports that the findings were probably inaccurate, as the reaction time of the patient was quite slow.

“Barany’s turning test showed twenty seconds’ nystagmus after turning in each

direction. This is a normal reaction of the vestibular apparatus.

"Impression: While a complete neurological examination was not done, and I have no knowledge of the condition of the deep reflexes and pyramidal tract, it is my feeling that there is probably an inadequate blood supply to the thalamic regions. His history of the propulsion gait is more suggestive of the phenomenon seen in paralysis agitans than of any cerebellar neoplasm. The unequal loss of hearing, however, is to be considered, and I suppose the cerebello-pontine angle must be excluded."

Laboratory findings: An x-ray of the skull done on May 17, 1939, was reported, "probably negative. There was some air in the ventricular system. The pituitary fossa was normal in size, and there was no evidence of increased intracranial pressure, metastatic malignancy or other bone changes. The skull configuration was suggestive of an oxycephaly."

Stereo of the skull on May 25 showed "a rather thin cranial vault without localized changes or signs of increased intracranial pressure. The pineal body was apparently in the midline and not displaced. The petrous and sphenoid ridges were clear and equal. There was rather marked calcification of the internal carotid artery on the left and apparently a small aneurysm lying just beside the sella turcica. Impression—aneurysm of the internal carotid artery."

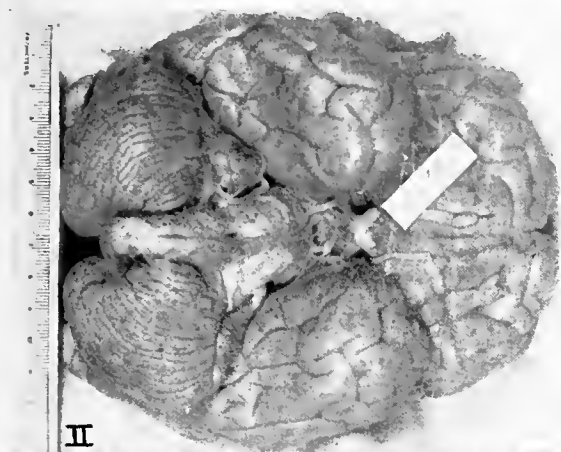
Film of the pelvis on May 25 showed "no evidence of metastatic malignancy. There was considerable hypertrophic arthritis."

Accessory Clinical Findings: A blood count taken on May 8 showed a hemoglobin of 86 per cent; 4,050,000 red blood cells; 8,600 white blood cells, with a differential of 75 per cent polymorphonuclears; 21 per cent lymphocytes, 2 per cent eosinophils, and 2 per cent monocytes. A urinalysis done on May 9 showed a specific gravity of 1.013, and a neutral reaction. It was negative for albumin and sugar, and showed only occasional leukocytes microscopically. Blood Wassermann and Kahn were negative. Blood chemistry on May 17 showed urea nitrogen, 9 mg., blood urea, 19.2 mg.; and blood sugar, 100 mg. per 100 cc. On the following day, his blood calcium was found to be 11 mg., his blood phosphorus, 4 mg., and his blood bromide to be less than 10 mg. per 100 cc. Spinal fluid examination made on May 19

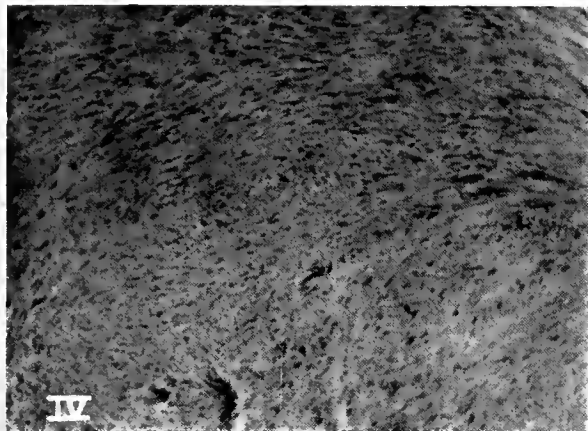
was reported as follows: Appearance—clear; cells—negative; globulin—marked increase; colloidal gold—11,222,100; Wassermann—QNS; and total protein—513 mg. The total protein content of the spinal fluid five days later was 120 mg. per 100 cc.

The patient was kept in the hospital from May 16 to June 1 and was discharged unimproved. On June 26 he was readmitted in an unconscious state with a very high fever. He never recovered consciousness, and died June 28, 1939. The following is a report of the autopsy findings.

Gross Anatomical Findings: The body is that of a thin, moderately well preserved, elderly white male 70-75 years old. The skin shows much hyperkeratosis over the entire body. There is a large sloughing ulceration over the lumbo-sacral region, which exposes the spinous processes of the vertebrae. The left inguinal ring is larger than the right. *Chest:* There is no free fluid in the pleural cavities and there are scattered, dense, fibrous adhesions. There is an irregular, thickened, white gritty area in the pleura, near the apex of the right lung. Both lungs are moderately heavy, and scattered through them are a number of lumpy, grayish-red areas, 5-12 mm. in diameter. The anterior portions of the lungs are light and feathery. *Heart:* There is no increase of pericardial fluid. The pericardium is smooth and glistening. The heart is normal in size. The valves and endocardium are normal. The aorta shows a few elevated, irregular, yellowish areas on its intima, especially in the abdominal portion. *Abdomen:* There is no free fluid in the peritoneal cavity. The peritoneum is smooth and glistening. All organs are in their normal positions. The liver is normal in shape and size, with a smooth surface. The gall bladder and ducts are normal. The spleen is normal in shape and about half the usual size. The substance is of a reddish-purple color and slightly tough. The pancreas is grossly normal. The gastrointestinal system is grossly normal. *Urinary System:* The kidneys are normal in size. The capsule strips easily, leaving only a very slightly granular surface. The cortex and medulla are sharply demarcated. The pelves have a smooth lining and are surrounded by a moderate amount of fat. The ureters are normal. The bladder contains about 30 cc. of slightly turbid urine. The wall is of the usual thickness and the lining is normal. The prostate is very slightly increased in



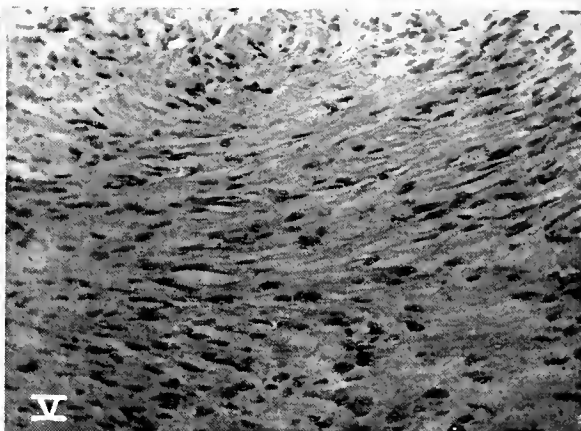
II



IV



III



V

Fig. 2. Brain, showing the cerebellopontine angle tumor, with displacement of the pons.

Fig. 4. Slide showing the tumor tissue, magnified 165 times.

Fig. 3. Transverse section of the cerebellum and tumor, showing pressure on the cerebellum.

Fig. 5. Slide showing the tumor tissue, magnified 355 times.

size, is quite hard and contains two or three stony concretions, 3-4 mm. in diameter.

Skull: The cranial vault has a moderately thin wall, and is otherwise normal. The brain and its meninges show no striking features, except in the right cerebellopontine angle. Here is an ovoid, encapsulated, firm, grayish-white tumor mass, 16 x 20 mm., which is attached to the acoustic nerve on this side. It presses down into the cerebellum and pushes the pons towards the left. On its free margin is a small depression with a slightly red base. Blood vessels around the base of the brain show only an occasional small, yellow plaque on their intimas.

Histological Findings: The tumor from the acoustic nerve is fairly cellular; and along the periphery in one area are numerous blood sinuses, hemorrhages, and a little surface erosion. Its cells have indistinct outlines; the nuclei are elongated and have a tendency to run in bands. In places there

is a palisade arrangement, and in other places there are some small whorls of cells.

Lungs: These show congestion and edema and a patchy purulent inflammatory process involving the bronchioles and their surrounding alveoli. **Kidneys:** The arteries show a little thickening of their walls and there is an occasional scattered hyaline glomerulus present. **Spleen:** The arteries and arterioles show thickening of their walls, and there is some calcification in the wall of one of the larger arteries. The pulp is engorged with blood. Liver, adrenals, pancreas, and heart show no striking histological changes.

Pathological Interpretation: Fibroblastoma of the acoustic nerve (cerebellopontine angle tumor). Bronchopneumonia.

Discussion

According to Cushing⁽²⁾, the historical information concerning acoustic tumors which

2. Cushing, Harvey: Tumors of the Nervus Acusticus, Philadelphia, W. B. Saunders Co., 1917.

Carl Gustav Lincke gathered in 1837 for his valuable and timely treatise on diseases of the ear, has served to introduce nearly all monographs on the subject since. The first clinical account of what seems to be an undoubted tumor of the acusticus appeared in 1830 in the appendix to Charles Bell's classical monograph on the nervous system. By far the most important and complete of these earlier reports was made by Jean Cruveilhier in a chapter on diseases of the dura mater, in the second volume (1835-1843) of his justly celebrated folios, *ANATOMIE PATHOLOGIQUE DU CORPS HUMAIN*.

Ewing⁽³⁾ says that intracranial tumors of the nerve trunks affect chiefly the acoustic, rarely the trigeminus nerve, and form a relatively frequent and characteristic group of brain tumors. They are usually single, rarely bilateral, and may form a part of general neurofibromatosis. He says the condition was reported by Foerster in 1862, and fully described by Monakow in 1900.

The tumors occur usually before the fiftieth year, and often in young persons. They may be associated with other abnormalities of the brain, such as hyperplasia and hypertrophy of the glia cells of the cortex, endothelioma and psammoma of the dura, sarcoma of the brain, and multiple hernia of brain tissue through the dura. These abnormalities suggest an underlying anatomical predisposition to tumor growth.

The tumors begin in a portion or involve the whole of the nerve trunk, producing a fusiform or round swelling which has been encountered as small as a cherry, or as large as a hen's egg. They are firm, lobulated, and encapsulated, but often adherent. They compress the cerebellum, medulla, and adjoining nerves. The diffuse swelling of the nerve may penetrate the internal auditory meatus.

The structure is usually that of simple neurofibroma, but some very cellular growths approach the type of neurosarcoma. Glia tissue has several times been demonstrated, and from this element a sarcomatous process may be derived. Regressive changes include fibrosis and cyst formation.

The trigeminus, acoustic, facial, glossopharyngeal, and vagus nerves arise from the neural ridge, which appears at an early date when the tissues are comparatively undifferentiated, while the other cranial nerves develop from the cerebral vesicles. Hence, the

former nerves may readily include embryonal cell groups which explain the complex structure of their tumors.

The clinical course is that of a slowly growing tumor of the posterior fossa, preceded by symptoms referable to the fifth or eighth nerve. The slow course and encapsulation place them among the operable cases, but the inaccessibility, adhesions, destruction of neighboring vital tissues, and occasional malignancy yield an unfavorable prognosis.

Cushing⁽⁴⁾ refers to his monograph⁽²⁾ on acoustic tumors, in which he adopted the simple term, "acoustic tumor", as being anatomically more precise than cerebellopontine tumor; for in the cerebellopontine recess other tumors than those arising from the acoustic nerve are not infrequent. This term was preferable to such histological misnomers as endothelioma, sarcoma, fibroma, gliofibroma, etc., which had been given to acoustic tumors. The designation "acoustic neurinoma" of Verocay was misleading, as the tumors probably contain no neuroglial elements; and it was scarcely necessary, as all of them have an identical structure. The more modern designation—perineural fibroblastoma of the acoustic nerve—introduced by Mallory—is histologically correct, but is unnecessarily cumbersome for everyday parlance.

Wechsler⁽⁵⁾ quotes Cushing as saying that these tumors take origin from the sheath of the eighth nerve at the internal auditory meatus.

Cushing⁽⁴⁾ further states that, if there is an accurate and dependable chronology of symptoms, these tumors are probably the most easily diagnosed of all intracranial neoplasms. Only when the anamnesis is faulty or undependable are they likely to be mistaken for other tumors of the cerebellopontine recess.

The tumors, moreover, so far as is known, originate in that portion of the nerve which lies within the porus acusticus, and since they have an obvious relation to von Recklinghausen's disease, in which multiple lesions of essentially the same histological nature occur, they are doubtless of similar congenital origin.

So far as our clinical experience goes, patients with large acoustic tumors may still

3. Ewing, James: *Neoplastic Diseases*, 1931, ed. 3, p. 471-473.

4. Cushing, Harvey: *Intracranial Tumors*, Springfield, Ill., C. C. Thomas Co., 1932, p. 85-92.

5. Wechsler, Israel S.: *Textbook of Clinical Neurology*, Philadelphia, W. B. Saunders Co., ed. 3, p. 502.

retain some hearing, but the vestibular responses to caloric tests are invariably abolished, and are never regained after operation.

Symptoms: These patients as a usual thing first show tinnitus, accompanied or followed by gradually increasing deafness on the affected side⁽⁶⁾. These two symptoms may be succeeded immediately by the other signs, or these may be delayed so long that the patient does not associate them with his earlier symptoms. After a longer or shorter period, then, there occurs evidence of pressure upon other cranial nerves in the neighborhood—most often the fifth, as suggested by a feeling of numbness in the face; or the seventh, as shown by weakness, or more rarely, twitching of the facial muscles. As the growth extends downward towards the medulla, the ninth, tenth, and eleventh nerves may be irritated or paralyzed, with consequent impairment of speech or of swallowing. Subsequent to the involvement of these various cranial nerves, the tumor begins to press inward against the pons, narrowing the aqueduct, and directly compressing the cerebellum. From this, two new sets of symptoms result: first, general pressure symptoms due to internal hydrocephalus; and second, evidence of cerebellar incoordination in the form of unsteadiness in gait or even actual staggering. Examination reveals paralysis of the vestibular portion of the eighth nerve (lack of response to instillation of cold water into the external ear), cranial nerve palsies, nystagmus, ataxia, and other cerebellar features. Choked disc is of course to be expected.

While mental symptoms occasionally occur, they are not common; headaches with suborbital discomfort should be listed among the symptoms. Nausea and vomiting, and finally cerebellar crises and respiratory difficulties are present in the terminal phases.

Comment: One explanation for the exceptionally high protein in this case may be found in the pathological report. As will be noted, the tumor had possibly been seeping from the eroded area. The colloidal gold was in keeping with that found in 32 per cent of Merritt's cases. It was a lilac or a number "2".

Our failure to diagnose this case during life was naturally a source of embarrassment to us. We are making no attempt to

"alibi" ourselves out of this situation. We simply hope that our mistake may help some of our colleagues, and keep them from making the same type of error.

The differential diagnosis between cerebral senile sclerosis and brain tumor was the chief difficulty presented by this case. The mental deterioration, the neurological symptoms, even the tinnitus, seemed explainable on a senile basis. The age of the patient was in favor of a circulatory etiology. This man's mental deterioration also interfered with his outlining a proper chronological array of symptoms. Normal eye-ground findings, too, were misleading; and, as will be noted, the x-ray diagnosis of marked calcification of the internal carotid artery on the left, and the suggestion of a small aneurysm, was not borne out in the pathological findings.

Conclusion

First, we have presented the case of a man of 71 who was well within the arteriosclerotic age, and who showed a tumor which usually appears before the age of 50. Second, while the arteriosclerotic element offered definite difficulty in making a differential diagnosis, it appears from the pathological report that this man had surprisingly little arteriosclerosis of his cerebral arteries. Third, in retrospect, it would seem that there are several things that should have made us consider brain tumor more seriously. These are: first, the unequal loss of hearing; second, the inconclusive Babinski on the left; third, the unusually high protein content of the spinal fluid; and fourth, the reduction in the corneal reflex on the right. Another error we made was in not having an x-ray of the porus acusticus internus done. This is often of great diagnostic aid.

The Physician's Knowledge of Human Nature.—The physician's knowledge of human nature must be profound in order to permit him to place the person in the various categories of the human species. He must recognize the intellectual, critical individual; the emotional, erratic type; the stolid, reluctant personality; the mentally inadequate as well as the ignorant. These are but a sampling of the various human problems that confront the physician in his daily life. He must be prepared to meet these innumerable problems with correspondingly innumerable variations in method.—F. A. Willius, M.D.: A Talk on the Science and the Art of Medical Practice, Proc. Staff Meet. Mayo Clinic, 15:649 (October 9) 1940.

6. Homans, John: Textbook of Surgery, Springfield, Ill., C. C. Thomas Co., 1931, p. 554-555.

THE ANTISTREPTOCOCCIC ACTION OF LOCAL APPLICATIONS OF ALCOHOL- ACETONE AQUEOUS MERCURO- CHROME IN ACUTE TONSILLITIS AND PHARYNGITIS

MARY A. POSTON, M. A.

and

WILLIAM D. FARMER, M. D.

Among the many preparations used for the local treatment of acute tonsillitis and pharyngitis are silver nitrate, gentian violet, methylene blue, metaphen, merthiolate, argyrol, hexylresorcinol, aqueous mercurochrome and alcohol-acetone aqueous mercurochrome (Scott's solution).^{*} Because of our impression that the best clinical results followed the use of 2 per cent alcohol-acetone aqueous mercurochrome, it seemed important to study the effects of local applications of this drug on the numbers of hemolytic streptococci found in the throats of patients. The results of this investigation are reported in this paper.

Materials and Methods

The patients were University students or members of the staff of the Hospital, who had been referred to us because of acute tonsillitis or pharyngitis. None had received previous medication. All cultures were taken by one of us in order to obtain more uniform results. Material for culture was obtained by rubbing a sterile rolled cotton applicator over the mucous membranes of the throat. The throat then was painted with Scott's solution. Half of the patients were asked to return in four hours, the other half in twenty-four hours for a second culture and another treatment.

The swabs were placed immediately into a test tube containing 10 cc. of plain beef infusion broth, pH 7.4. As much material as possible was washed from the swabs by rolling them against the inside wall of the test tube. One cc. of this broth was transferred to another test tube containing 10 cc. of beef infusion broth (tube 2). After thorough mixing 1 cc. of the broth in tube 2 was transferred to a third tube of broth (tube 3). Two plates were poured, using molten plain beef infusion agar to which 2

cc. of sterile blood had been added, with 1/10 cc. of the mixture in tube 2 for one plate and 1/10 cc. of tube 3 mixture for the other plate.

Results

Fifty-nine patients with acute tonsillitis and pharyngitis were treated with 2 per cent alcohol-acetone aqueous mercurochrome. Cultures of the throats before treatment showed hemolytic streptococci in only 26 instances. Twenty of the patients with cultures positive for streptococcus hemolyticus returned for a second culture either four or twenty-four hours after treatment. In 18 patients the second culture showed a decrease in the number of hemolytic streptococci (Table I).

TABLE I
Number of Colonies of Streptococcus Hemolyticus
in Throat Cultures of Patients Before and
After Treatment

Patient	Before Treatment	4 Hours After Treatment	24 Hours After Treatment
R. P.	Innumerable	14	—
R. C.	Innumerable	73	—
W. S.	Innumerable	101	—
A. M.	Innumerable	50	—
J. W.	100	3	—
D. R.	100	0	—
M. J.	100	—	17
A. W.	80	—	39
A. S.	79	—	7
H. C.	43	—	0
R. P.	15	0	—
J. R.	15	—	2
J. S.	11	3	—
R. R.	4	—	0
P. T.	4	—	0
D. Y.	4	—	2
H. C.	4	—	6
H. G.	2	—	1

The number of streptococcus colonies was unchanged in one patient, and in another patient the number was increased.

The number of cultures positive for streptococcus hemolyticus was much lower than was suspected clinically. It was not possible to determine the etiologic organism from the appearance of the throat alone.

Summary

1. Eighteen of 26 patients with a hemolytic streptococcus infection of the throat showed a decrease in the number of streptococcus hemolyticus colonies after local application of 2 per cent alcohol-acetone aqueous mercurochrome (Scott's solution).

2. These findings are in agreement with the clinical observation that this solution is effective in relieving symptoms accompanying acute tonsillitis and pharyngitis.

From the Department of Bacteriology and the Department of Otolaryngology of the Duke University School of Medicine and Duke Hospital, Durham.

* Mercurochrome 2 Gm., alcohol 55 cc., acetone 10 cc., distilled water 35 cc.

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JANUARY, 1941

TAKING INVENTORY

Since, with this issue, the NORTH CAROLINA MEDICAL JOURNAL enters upon its second year at the customary season for inventory taking, the time seems opportune for a heart-to-heart talk with our readers.

The Editorial Board, with the hearty cooperation of the unofficial Associate Editors, has tried to make the journal worthy of the best traditions of North Carolina and the North Carolina medical profession. We have tried, first of all, to have the NORTH CAROLINA MEDICAL JOURNAL neat and dignified in its appearance. For this we are to thank the Penry-Aitchison Printing Company, particularly Mr. Harry Aitchison and Mr. L. B. Womble, who have assumed the responsibility for its make-up. They have borne with the utmost courtesy and patience the inexperience of the editor and the assistant editor.

Of equal importance is the quality of the contents. We are fortunate in the ability of the profession of North Carolina, which has assured us an abundance of original articles from which to choose; and we have been fortunate, also, in the high quality of papers and addresses from visitors to the state. It has been impossible, of course, to publish all

the papers that have come to us, and a number have been regretfully returned to their authors. Every paper submitted, however, has had the sympathetic consideration of at least two competent readers. If these did not agree, a third was asked to cast the deciding vote.

Doubtless many contributors, especially those who read papers at the annual meeting in May, have wondered why publication of their papers has been so long delayed. In selecting papers for each issue, there are a number of factors to consider. First is the question of timeliness. To a certain extent, this enters into the publication of all papers, but in some it is much more important than in others. Another consideration is the proper balance of material in each issue. A very important factor is that the number of pages in each issue must be a multiple of four. Some papers have been carried over as long as three months, for the same reason that Charles Dickens' character, Mr. Venus, gave for failing to incorporate Silas Wegg's amputated leg into a skeleton he was assembling: "I can't work you into a miscellaneous collection, nohow; do what I will, you can't be got to fit."

When any doctor gives a special reason for the early publication of a paper—for example, if he is seeking certification by one of the various boards, has been proposed for membership in such an organization as the College of Surgeons or Physicians, or if he desires priority in some original research—we are glad to publish his article as soon as possible.

Most of the Clinico-Pathological Conferences that we have been carrying every month have been furnished during the past year by Duke Hospital, the City Memorial Hospital of Winston-Salem, and the North Carolina Baptist Hospital. There are other good hospitals in the state that should have such reports for publication. These would be gladly received.

We realize that there have not been enough news notes of general interest, and too few reports of county society meetings. However, we cannot publish news notes without news, and must depend upon the secretaries of the various county and district societies, and of the other medical organizations, for programs, resolutions, and items of general interest about their members. We draw heavily upon the two month-

ly county Bulletins, and are always glad to have programs of other meetings.

It is important that manuscripts submitted be double spaced, with liberal margins. Single spaced articles are hard to read, and leave no room for corrections. In the future all manuscripts that are not double spaced will be returned to the authors for retyping.

The publication of our journal is made possible by our advertisers; and it carries only high grade advertising by high grade advertisers. You will help our journal by patronizing these firms, and by letting them know that you read their advertisements in the NORTH CAROLINA MEDICAL JOURNAL.

Finally, let every member of the North Carolina Medical Society read on page iv, above the Table of Contents, that the NORTH CAROLINA MEDICAL JOURNAL is "the official organ of the Medical Society of the State of North Carolina"; and on the first page of reading matter, and again on the editorial page, that it is "owned and published by the Medical Society of the State of North Carolina." The NORTH CAROLINA MEDICAL JOURNAL belongs to you; help make it a publication you can be proud of.

* * * *

DR. EDGAR A. HINES

On November 27, Dr. Edgar Alphonso Hines, Sr., of Seneca, South Carolina, died of coronary occlusion. His passing is a great loss to the medical profession of South Carolina and of the nation. Except for a two-year interim, he represented our sister state in the House of Delegates of the American Medical Association for thirty years. He had been secretary of the South Carolina Medical Association and editor of its Journal so long that his name virtually symbolized organized medicine in South Carolina.

To the very last, Dr. Hines was a busy man. Among the many medical organizations to which he belonged were the American Academy of Pediatrics and the American College of Physicians. He was chairman of the Committee on Medical Preparedness for South Carolina.

Dr. Hines possessed the spirit of eternal youth, that kept him always abreast of his profession. His son, Edgar A. Hines, Jr., is now connected with the Mayo Foundation as Associate and Consultant in Medicine, and is Assistant Professor of Medicine at the University of Minnesota. The names of

father and son appear together as Fellows in the Directory of the American College of Physicians. To the son, the NORTH CAROLINA MEDICAL JOURNAL extends sincere sympathy. It is good to know that his shoulders are so capable of bearing the mantle that has fallen from his father.

* * * *

DR. FRED HANES HONORED

Last month a signal honor came to Dr. Frederic M. Hanes, Professor of Medicine at Duke University. According to the *New York Times* for December 20, "The Phi Beta Kappa Associates, an organization founded last February to cooperate with the Phi Beta Kappa Fraternity in the development of a high caliber of American leadership, elected eighty founder members from all parts of the United States at the first annual meeting" held in New York on December 19. Dr. Hanes was one of these founder members. The *Times* stated that "with the diploma signifying membership in the organization, each of the eighty leaders in the civic and professional life of the nation received a citation commending him for high intellectual achievements and distinguished public service."

Dr. Hanes's citation read as follows:

"Frederic M. Hanes: Educator and physician, a tireless worker in the fields of pathology and neurology, he is now professor of medicine at Duke University. Shortly after receiving his medical degree at Johns Hopkins University he became pathologist at the Presbyterian Hospital in New York city, and associate professor of pathology at Columbia University.

"At the outbreak of the World War he was assistant in neurology at Queens Square Hospital in London, and, on United States entry into war he became lieutenant-colonel in the army medical corps, in command of a base hospital. A fellow in the American College of Physicians, member of the American Association of Physicians and the Clinical and Climatological Association, he comes to Phi Beta Kappa Associates as a founding member."

It was no surprise that Dr. Hanes was selected for his "high intellectual achievements and distinguished public service"; but the doctors of North Carolina are justly proud of the additional honor that has come to this distinguished member of a distinguished family.

DO THE PEOPLE WANT PREPAID MEDICAL SERVICE?

In much of the propaganda directed against organized medicine the suggestion is made over and over that the people in the low income groups are most anxious to insure themselves against sickness. The impression is left, either by direct assertion or by innuendo, that the medical profession blocks every such plan proposed. Indeed, the suit against the A. M. A. is based upon the charge that this organization has persistently fought an attempt upon the part of government employees in Washington to provide prepaid medical service for themselves.

An interesting commentary is the experience of the District of Columbia medical profession in its effort to meet this supposed demand by establishing its own prepayment medical service plan. Approximately six hundred physicians agreed to support the program, known as Mutual Health Service, "in the sincere hope that under this plan medical care could be made more readily available to the low-income group." The story of the undertaking is told in the April number of the *Medical Annals of the District of Columbia*. After carefully studying approved methods for such a service, a whole-time administrator was employed. Every effort was made to secure the approval and cooperation of various Government agencies, but the only one that showed any spirit of helpfulness—or, indeed, the slightest interest—was the Department of Agriculture. Of the 26,219 employees of government agencies or business institutions finally circularized, only 2,219 replies were received. Of those replying, 265 were eligible and interested; 940 were eligible but not interested; 536 were not eligible but interested; 473 were not eligible and not interested; 5 were undecided. On April 3, 1940, the Medical Society of the District of Columbia was obliged to abandon the undertaking.

When it is seen that, with a single exception, all Government agencies in Washington are indifferent to prepaid medical care for the low income group, and that, of the people given an opportunity to obtain such sickness insurance, only a trifle more than one per cent of those eligible were interested, one must agree with the conclusion reached by the editor of *Medical Annals* "that the demand for prepaid medicine has been ex-

aggerated. It is quite apparent that a majority of people are not ready nor do they want change in the present method of providing medical care."

* * * *

A NEW SULFA DRUG

Science for December 20, 1940 (page 9 of the Supplement), tells of a new member of the sulfonamide group called sulfanilylguanidine, which promises to be very useful in treating infections of the intestinal tract. It is fairly soluble in water, but very poorly absorbed from the digestive tract, and most of it reaches the colon. After Dr. E. K. Marshall, of Johns Hopkins, first tried it on animals, Dr. Warfield M. Firor, acting chief surgeon at the Johns Hopkins Hospital, used it to rid the alimentary canal of germs preliminary to operations that necessitate opening the bowel. "In every case so far the wounds have healed without infection", and there have been no deaths thus far in the series. "In one case the bacterial count dropped from 17,000,000 to 10,000."

The drug is being tried in bacillary dysentery. While the preliminary reports are encouraging, Dr. Marshall says that the number of cases treated thus far is too small for proper evaluation. One great advantage of sulfanilylguanidine is that it is the least toxic of the sulfa group. It has not yet been released for sale, but is going through a probationary period, just as did sulfapyridine and sulfathiazole. Let us hope that this new remedy may be the weapon needed to conquer that weird and baffling malady, ulcerative colitis, as well as various other intestinal infections.

* * * *

DR. CHARLES O. DELANEY

Dr. Charles O. DeLaney, of Winston-Salem, died of coronary heart disease just after midnight on December 15. He was in the very prime of a busy and useful life. His good judgment, manual dexterity, and devotion to his chosen field, urology, made him highly respected by his patients and his colleagues. His intimates knew him as a warm-hearted, generous friend, who "bore without abuse the grand old name of gentleman." On behalf of the medical profession of the state, the NORTH CAROLINA MEDICAL JOURNAL extends deepest sympathy to his wife and children.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

Presentation of Case

A male negro, 50 years of age, was admitted to the hospital complaining of pain in his side.

The onset of the illness was somewhat indefinite. The patient stated that he had had pain in his right side for the previous three to four weeks, and thought that he had "strained himself." The pain improved somewhat, but two days before admission it became very severe, and he went to bed and called a private physician. This physician found marked tenderness over the right sacro-iliac joint and pain on motion of the right thigh. The patient was hardly able to turn over in bed. His temperature, pulse and respiration were normal and his abdomen was flat and soft. There was no tenderness in the kidney region. The physician strapped his back, and this considerably relieved the pain. Two days later the physician was called again and found the patient in extreme pain, with the tenderness over the sacro-iliac region described above, and, in addition, tenderness over the right kidney and a definite tender mass palpable deep in the right side of the abdomen. There was some rigidity of the abdomen. The patient was referred to the hospital.

The family history and past history were non-contributory.

Physical examination revealed a lethargic, rather un-cooperative individual. There was a definite arcus senilis present. The pupils reacted to light and accommodation. The lungs were clear. The heart showed a moderate degree of hypertrophy of the left ventricle, and a sinus arrhythmia was present. The abdomen was asymmetrical; the right side was more prominent than the left and was rigid. Both the distention and the rigidity extended into the flank, downward almost to the inguinal ligament, and upward to within 10 cm. of the costal margin. A mass about 5 cm. in diameter was palpable in this region, and was palpable equally as well in the flank as from the anterior surface. The lateral and posterior portions of

this mass appeared to be larger than the anterior portions. The mass was very tender and dull to percussion. There were numerous large varicosities of the right leg, some measuring as much as 2 cm. in diameter; and the circumference of the right leg was 5 cm. greater than the circumference of the left leg. The blood pressure was 160 systolic, 90 diastolic; the pulse, 90, the temperature, 98.2 F., and the respirations 24.

Examination of the urine on admission showed a cloudy, straw-colored, acid urine, with 16-19 white cells per high power field and occasional red blood cells. No albumin or sugar was present. There were 2,750,000 red cells, 7 grams of hemoglobin, and 8,150 white cells with 82 per cent polys and 18 per cent lymphocytes. The Kline test was negative. On the day after admission the urological consultant described the mass as fluctuating and in the region of the right kidney. There was considerable rigidity of the lumbar and abdominal muscles. A flat plate of the abdomen "shows an opaque shadow about the size of a BB shot on the right side at the level of the transverse process of the third lumbar vertebra. It is in the region of the lower pole of the kidney, and may be a stone in the kidney, as it appears too far out to be a stone in the ureter. The kidney outline is not defined. The right diaphragm is considerably elevated and the right psoas outline is obliterated by a soft tissue mass." The cystoscopic examination revealed nothing abnormal in the bladder except moderate congestion. A number 6 French catheter passed easily to the pelvis of the left kidney. A number 7 French catheter passed about two-thirds the way up the right ureter and then stopped. Indigo carmine appeared from the left kidney in six minutes, and from the right kidney had not appeared at the end of thirty minutes. The next day a pyelogram showed that "the catheter in the right ureter is displaced toward the midline by a soft tissue mass filling the right side of the abdomen. The right kidney is displaced upward and medially over the twelfth dorsal and first lumbar vertebrae." Urine collected from the right kidney pelvis showed the microscopic field to be entirely covered with pus cells. The culture of this urine was negative. A nonprotein nitrogen done the day after the pyelogram was 42 mg. per 100 cc. and the creatinine was 3 mg. per 100 cc. The patient rested fairly comfortably, yet any attempt at move-

ment caused great pain. He was lethargic during his entire stay in the hospital. His temperature was normal or slightly below normal, except for one rise to 99.8 F.; his pulse varied between 90 and 100; and his respirations varied from 20 to 24. The patient died rather unexpectedly during the night of the fourth hospital day.

Differential Diagnosis

Dr. Howard M. Starling

The most outstanding symptoms presented by this patient, it seems to me, are:

1. Pain in the right side of three or four weeks' duration.
2. Pain over the right sacro-iliac joint.
3. Pain on motion of the right thigh.

The most outstanding physical signs appear to be:

1. Mass in the right side of the abdomen, extending into the flank, with tenderness and muscular rigidity.
2. Description of the mass by the urological consultant as fluctuant.
3. Secondary anemia (hemoglobin, 7 Cm., red blood cells 2,750,000).
4. Varicosities and increase in size of the right leg.

Other findings to be kept in mind are:

1. Tenderness over the right sacro-iliac and kidney regions.
2. Pyuria, which was found to be from the right kidney.
3. Obstruction to the catheter in the right ureter.
4. Absence of dye from the right kidney.
5. X-ray evidence of obliteration of the outline of the psoas muscle, elevation of the right side of the diaphragm, and displacement of the right kidney and ureter medially by the mass.

There are several possible conditions to be considered in the differential diagnosis:

1. Perinephritic abscess.
2. Psoas abscess.
3. Appendiceal abscess.
4. Hyperplastic tuberculosis of the cecum.
5. Carcinoma of the cecum.
6. Dissecting aneurysm of the aorta.

A perinephritic abscess, or perirenal abscess, may be primary or secondary. The primary form is hematogenous in origin and is carried from some distant focus, while the secondary form is a result of pus getting into the perirenal tissue from some neighboring organ. This organ may be the kidney, or it may be the appendix, gall bladder or

pelvic organs. The pus may pass upward and form a subphrenic abscess, or down into the pelvis. The findings here that might be in keeping with a perinephritic abscess are: pyuria from the right kidney, pain on motion of the right leg, and x-ray findings that are quite in keeping with those of a perirenal abscess. Against this diagnosis, though, I would call attention to the relatively small amount of tenderness directly over the kidney posteriorly, with the apparent absence of muscle spasm posteriorly. The presence of varicosities and edema of the right leg and the absence of pyrexia and leukocytosis could hardly be explained by this condition, and I am of the opinion that this man did not have a perinephritic abscess.

Appendiceal abscess is a possibility. No other organ produces so many bizarre symptoms and signs in the lower abdomen as does the appendix. The tender mass with muscle spasm and pain on movement of the right leg could certainly be caused by an appendiceal abscess; the ureteral obstruction could be produced by pressure on the ureter; and I think we could conceivably have a normal temperature and a normal total white count. However, there is a total absence of any history suggestive of acute appendicitis, and appendiceal abscess therefore appears improbable.

Pott's disease of the spine may be caused by any one of the "Big Four" diseases—namely, inflammation, syphilis, tumors and tuberculosis. Tuberculosis is by far the most frequent offender. The dorsolumbar region is most frequently involved. In the adult it begins as a periostitis. Several vertebrae may be involved, and while there is not an extensive process in the vertebrae, nevertheless, there is a very definite one. Pus formed at the seat of the disease displays a remarkable tendency to travel. The pus may enter the sheath of the psoas, which is attached internally to the bodies of the vertebrae. It may come to the surface in the lumbar region, extend into the iliac fossa, or pass behind Poupart's ligament and point in the groin. The mass found here could be from a psoas abscess. The ureteral obstruction and consequent pyuria could be caused by a local pressure effect, but here again the absence of pyrexia and leukocytosis, and the negative x-ray findings in the bodies of the vertebrae pretty well exclude this diagnosis.

Hyperplastic tuberculosis begins in the ileocecal region. There is a great formation

of tuberculous granulation tissue. Ulceration may develop, but it is not a marked feature of the disease. A tumor-like mass may be formed, which may bear a strong resemblance to a carcinoma even after the abdomen has been opened. The neighboring lymphatic glands are usually enlarged. Hyperplastic tuberculosis is usually associated with anemia such as we have here. Pain is an inconstant and unreliable factor, as it is in malignancy. Temperature may or may not be present. The leukocyte count is usually not sufficiently increased to be of much assistance. The age of the patient makes a hyperplastic tuberculosis improbable, for it occurs in young adults and is rare in patients over the age of 40.

In carcinoma of the cecum and right half of the colon the most common findings are: (1) tumor mass and (2) secondary anemia. Tumefaction occurs relatively early in this segment of the bowel, and its accidental discovery occasionally calls attention to the presence of a cancer before other symptoms manifest themselves. Anemia almost always accompanies growths in this region, and it is one of the earliest symptoms of right colonic cancer. Rankin says that all cases of unexplained secondary anemia should lead to an investigation to disprove the presence of a right-sided growth. Loss of weight and cachexia are unimportant symptoms of right colonic malignancy, and are rarely present before the diagnosis is apparent. Attacks of abdominal symptoms varying from "indigestion and dyspepsia" to symptoms of subacute or even acute appendicitis are usually present, but these symptoms may be entirely absent. Growths in this area have a tendency to form abscesses and to perforate. Here we have a patient 50 years old, in the cancer age, with a mass in the right side of his abdomen and a secondary anemia, the two earliest symptoms of carcinoma of the right colon. Local extension of the growth with resulting pressure on the right ureter can account for the signs of obstruction of the right ureter. Secondary infection resulting from ulceration may explain the tenderness and muscle spasm present. The findings that would not be in favor of this diagnosis are several. First, it would seem quite unlikely that a local invasion and extension of the growth around the iliac veins would cause enough obstruction to account for the varicosities and edema of the right leg. There appears to be an unusual amount of pain in

the sacro-iliac and kidney regions, with a relatively small amount of pain anteriorly, to be accounted for by a carcinoma of the colon. A secondary infection present resulting from ulceration might account for his pain and tenderness, but is unlikely with no temperature and no leukocytosis. It is also difficult to explain the patient's sudden exodus as a result of carcinoma. However, it is possible that we might be dealing here with a carcinoma, with the sudden death being caused from an embolus.

Dissecting aneurysm of the aorta is one in which the blood has made its way through a necrotic area of the media into the middle coat and has then proceeded up or down the vessels, splitting the middle coat in its passage. It is not a real aneurysm but rather a hematoma of the arterial wall. The cause of this condition is not known. We do know, however, that it is not syphilitic in origin. Pain is the most common subjective manifestation, and the pain from a dissecting aneurysm arising in the abdominal aorta is usually located in the back. Extension of the aneurysm may cause agonizing pain. Constant dull boring pain may be the first and most common subjective manifestation of dissecting aneurysm of the abdominal aorta. The ureteral obstruction with a consequent hydronephrosis may be secondary to pressure on the ureter. An edema of the lower extremities may be caused by pressure on the inferior vena cava. Here we have a palpable mass in the lower right abdomen which was described as being fluctuant. The mass extends into the right flank. The pain could certainly be explained by a dissecting aneurysm of the aorta. The obstruction to the right ureter and infection of the right kidney could be caused by pressure on the ureter, and the varicosities and swelling of the right leg could result from obstruction to the return venous flow through the right iliac vein. The mass posteriorly could explain the x-ray findings of obliteration of the outline of the psoas muscle and displacement of the right ureter and kidney medially; and lastly, a rupture of the aneurysm through the external coat of the aorta, with consequent fatal hemorrhage, could explain the patient's sudden death. It seems most likely to me that this patient's death should be attributed to a ruptured dissecting aneurysm of the abdominal aorta.

Clinical Diagnosis

Retroperitoneal sarcoma.

Dr. Starling's Diagnosis

Ruptured dissecting aneurysm of abdominal aorta.

Pathological Diagnosis

Dissecting aneurysm of aorta with rupture.
Retroperitoneal hematoma on the right.
Pleural effusion, right.
Hydronephrosis, left.
Cardiac hypertrophy.
Benign enlargement of prostate.

Pathological Discussion

Dr. T. T. Frost

The mass described clinically was found to be a retroperitoneal hematoma containing over 2,000 cc. of partially clotted blood. This hematoma extended from the pelvic brim to the level of the diaphragm, and completely surrounded the right kidney and adrenal. The ureter lay anterior to the mass and was displaced anteriorly and medially. There was a dissecting aneurysm of the aorta which extended from a point just distal to the orifice of the innominate artery throughout the entire length of the thoracic and abdominal aorta, 4 cm. along the left common iliac artery, and 4 cm. along the right iliac artery. At this point in the aneurysm there was an oval perforation with rounded, thickened edges from which a grayish laminated blood clot projected. This oval opening communicated with the retroperitoneal hematoma. The dissection had occurred, as is usual in this type of aneurysm, in the middle of the medial coat of the aorta. The original lumen of the aorta was compressed, and the blood flow had been through the channel of the aneurysm. The edema and varicosities of the right leg were caused by pressure on the right iliac vein by that portion of the aneurysm that extended along the right iliac artery. The upper opening of the aneurysm measured 2 x 3 cm. in diameter, and the edges of this aneurysm were perfectly smooth, slightly rolled and covered by endothelium. The aneurysm was lined throughout by a well developed layer of endothelial cells. Beneath this lining, irregular striations representing the structure of the media could be seen. The superior mesenteric and left renal arteries originated from the lumen of the aneurysm. The rest of the abdominal vessels received their blood from the original lumen of the aorta.

Other findings of minor importance were: sufficient fluid in the right pleural cavity to cause complete atelectasis of the lower lobe

of the right lung; a moderate hydronephrosis of the left kidney and a considerable degree of benign enlargement of the prostate.

Dissecting aneurysms of the aorta are not rare, and are based on an idiopathic necrosis of the media. There is no known connection with syphilis. The findings in this case were unusual in that the aneurysm had been present long enough to be lined by endothelium. In the usual case death results so quickly that the endothelium does not have time to grow out and line the lumen of the aneurysm.

BULLETIN BOARD

PRESIDENT'S MESSAGE

MEDICAL LEGISLATION

The 1941 session of the North Carolina Legislature will soon convene. A new governor of North Carolina, J. M. Broughton of Raleigh, will be inaugurated.

North Carolina has never had a governor with higher intellectual attainments, with more scrupulous ideals for our profession, or with a more intimate knowledge of the complex problems which so often present themselves to us. His interest in medical problems is a sympathetic one and is of long standing. Members of his family have been physicians. For many years he has been a trustee of Wake Forest College. The Medical School of that institution and its present expansion and increased usefulness is of vital interest to him. All medical legislation of a major nature must have the endorsement of the administration leaders, of whom the Governor is the chief.

The Medical Society of the State of North Carolina has a Legislative Committee, of which Dr. Donnell Cobb of Goldsboro is chairman. Dr. T. W. M. Long, the Secretary-Treasurer of the Society, will again represent his district as a Senator. In view of the confidence of his fellow legislators, his experience, his intimate knowledge of legislative procedure, and his generous desire to help again as he has in the past, it would be difficult to place a high enough estimate on the aid which he will be able to render on all medical legislation offered through your legislative committee.

While not directly a Medical Society bill, a bill to attach a charge to every automobile license plate sold in North Carolina in order

that hospital bills of all people injured on the highways may be taken care of, will in all probability be again presented to the Legislature. The Wayne County Medical Society has already given its endorsement to a bill of this nature.

It is desirable to have a full time health department in every county in North Carolina. Legislation could accomplish this, and counties which have county health programs could be protected from communities which are not expending money to protect themselves or others against disease.

It is thought that it will be well to grant reciprocity to neighboring states which have the same health certificate requirements for marriage as North Carolina.

The usefulness of our State Board of Health could be increased greatly by an increased appropriation from the State. Much the larger part of its funds come from the Federal Government, and the expenditure is necessarily under a certain amount of Federal supervision.

Our mental institutions are under-manned and over-crowded, and an increasingly heavy burden is being placed on the physicians and personnel in these institutions. North Carolina stands well down toward the bottom of the list of states, between the forty-fifth and forty-eighth, in per capita expenditure yearly for mental cases. More generous help from the State would mean more cures and less institutional burden.

Mental Hygiene is apparently in its infancy in North Carolina. Two full time psychiatrists are employed by the Welfare Department of the State. They serve a population of 3,500,000 people. It is obvious that the funds given to this very essential public health service are inadequate. Most of the patients admitted to our State Hospitals for the insane have been ill for several months before admission. An early diagnosis and early treatment in mental diseases increase the prospect of cure. An adequate Mental Hygiene program would prevent many institutional cases. Enough funds should be allocated for a program similar to the very successful tuberculosis program carried out in this state and elsewhere, to reach every section of the state in an effort to help prevent mental diseases.

Our splendid tubercular institutions and their successful, ever increasing sphere of

preventive and curative work, deserve our endorsement and support.

Other legislation will come before the legislature which will arouse your interest, and should command your attention and action. Your Legislative Committee is your voice and your acting body. You may count on it to carry out your expressed will as far as it is able. It deserves your support, both at home with your individual legislators, and in the Legislative Chambers in Raleigh.

HUBERT B. HAYWOOD, *President*
Medical Society of the State of
North Carolina.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. G. F. Otto, Professor of Parasitology at Johns Hopkins University, spent the week of December 1 in Chapel Hill, cooperating with Dr. H. W. Brown and Dr. J. C. Andrews in hookworm and malaria research.

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Dr. H. W. Brown of the School of Public Health Faculty recently addressed the Wayne County Medical Society on "The Diagnosis and Treatment of Parasitic Diseases".

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Professor H. B. Gotaas of the School of Public Health Faculty gave a paper in New York recently before the Textile Section of the American Society of Mechanical Engineers on "The Treatment of Textile Wastes", embodying the material from the textile waste research program which has been carried on cooperatively between The Textile Foundation and the School of Public Health.

* * *

Miss Ruth Warwick Hay has been appointed Professor of Public Health Nursing on the faculty of the School of Public Health of the University of North Carolina. Miss Hay has been Assistant Professor of Public Health Nursing in the Department of Hygiene of the University of California, at Berkeley, for the past four years. Miss Hay will come to Chapel Hill in the late spring or early summer of 1941, and courses for graduate nurses who wish to specialize in Public Health Nursing will be offered for the first time at Chapel Hill beginning in the fall of 1941.

* * *

Dr. Herbert Fox, Dr. I. H. Manning, Jr. and Dr. Frances Hill Fox have been appointed Instructors in Medicine to assist with the teaching in Physical Diagnosis at the Watts Hospital, Durham.

* * *

Dr. Wm. deB. MacNider recently attended a meeting of the American Philosophical Society and of the National Academy of Science.

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Dr. W. R. Berryhill recently addressed the Randolph County Medical Society on Atypical Pneumonia.

NEWS NOTES FROM DUKE UNIVERSITY SCHOOL OF MEDICINE

November and December, 1940

On November 29-30, 1940, the Tenth Anniversary of the opening of the School of Medicine and Hospital was celebrated and the new Department of Neuropsychiatry was dedicated. One hundred and twenty medical alumni and former members of the house staff were present. Dr. Adolf Meyer, Henry Phipps Professor of Psychiatry of the Johns Hopkins University School of Medicine, addressed the staff, students and alumni on Considerations on Psychiatry or Ergasiatrics as an Essential and Natural Part of All Medical Training and Practice. Special clinics and talks were given by Drs. R. L. Flowers, F. M. Hanes, D. T. Smith, Deryl Hart, Bayard Carter and W. C. Davison.

On November 29, 1940, the Duke University School of Medicine Alumni Association was organized with the following officers: J. M. Arena, president; R. W. Graves, vice-president; J. L. Callaway, secretary-treasurer, L. D. Baker, corresponding secretary.

On December 11, 1940, Dr. Lee E. Farr, Director of Research of the Alfred I. duPont Institute of the Nemours Foundation held a clinic on the Treatment of Nephritis.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

The final figures of the 1940 census, issued within the past week, place the population of North Carolina at 3,571,623, of which number 3,201,808, or ninety per cent, enjoy the protection of organized public health.

Dr. Carl V. Reynolds, in a summary of the State Board of Health's activities during the year 1940, states that:

"No year in the history of the North Carolina State Board of Health has presented greater opportunities for service or imposed more responsibilities than 1940. With the development of our national defense program, a new emphasis is placed on the importance of preventive medicine, with which the Board is chiefly concerned, and there has come the profound conviction that end-results must be de-emphasized and increased attention given those basic factors which involve cause as well as effect.

"On January 1, the Board of Health entered upon a nutrition study, in cooperation with the Duke University School of Medicine, the groundwork for which previously had been laid by Dr. D. F. Milam and Dr. John A. Farrell, both of the Rockefeller Foundation, with the support of the State Health Officer, a local committee, and Dr. W. C. Davison, dean of the Duke Medical School.

"Immediately upon the passage of the selective service act, the State Board of Health launched an intensified health education program to encourage registrants to submit voluntarily to serologic tests for syphilis among young men between 21 and 36. Out of 448,555 who registered for the draft, 130,000 submitted to such tests. Thus, the North Carolina State Board of Health was able to begin the greatest case-finding program and the most extensive epidemiological study ever undertaken by any State, designed to aid in the eradication of syphilis among civilians as well as men under arms.

"Earlier in the year, the State Board of Health announced the results of a venereal disease survey among 9,533 prisoners in camps throughout the State, in cooperation with the North Carolina Highway and Public Works Commission. Since that time the incidence of syphilis among new prisoners has been greatly diminished, reflecting results accom-

plished in 286 public health venereal disease clinics, which hold 379 weekly sessions, or the equivalent of 19,708 a year. On January 1, there were only 229 such clinics.

"The State Board of Health now is sponsoring a total of 496 clinics throughout North Carolina, including those mentioned above, 20 for crippled children and 190 maternity and infancy clinics.

"During 1940, the Board of Health's Central Tabulating Unit has tabulated 22,140 new venereal disease cases, including 17,940 cases of syphilis and 3,891 cases of gonorrhea. There are now 36,000 active cases of syphilis under treatment in public health clinics. The Central Tabulating Unit has also tabulated 22,453 cases of other infectious and communicable diseases. It processes the equivalent of 42,000,000 cards a year in the course of all its activities.

"One of the outstanding public health accomplishments during 1940 has been the completion of the new \$320,000 State Laboratory of Hygiene, including the downtown building and the farm eight miles west of Raleigh.

"The national defense program has also increased the work of the Division of Vital Statistics. It is now issuing approximately 300 delayed birth certificates a day, for those who must prove their citizenship to work in plants with government orders, and for other necessary purposes, in addition to its routine duties.

"The circulation of the Health Bulletin, issued through the Division of Preventive Medicine, has been increased from 55,000 to 60,000 in 1940. Maternity and infancy clinics have been opened in a half dozen new counties. Two professorships have been established for services at the School of Public Health at the University of North Carolina and at Duke University. Dr. A. W. Makepeace, obstetrician, and Dr. Robert B. Lawson, pediatrician, elected to fill these professorships, already have assumed their duties.

"The activities of the School Health Coordinating Service, a conjoint activity of the State Board of Health and the State Department of Public Instruction, have been carried into Person, Orange, Chatham and Wayne counties during 1940.

"During 1940, the State Board of Health, through its Division of Sanitary Engineering, has set up more WPA waterworks and sewer extension and improvement projects than any other State, in proportion to population and wealth. More than 22,000 new sanitary privies have been built in rural communities, bringing the total of such units to over 200,000.

"Organized public service has been extended to three additional counties during the year, with two more now virtually in, making a total of eighty-one.

"The Division of Industrial Hygiene, a conjoint activity of the State Board of Health and the North Carolina Industrial Commission, has given pre-employment examinations to more than 1,500 men in camps at Glenville and Nantahala, who are to work on projects in that section involving national defense, while sanitary and general health protection has been given to 2,000.

"Dental corrections have been given 67,361 underprivileged school children by the Division of Oral Hygiene, while those who were able to pay were referred to their private dentists by the thirty-three school dentists in this Division, including seven Negro dentists, who work among the members of their races.

"There are at this time 17,470 crippled children on the State Board of Health's register. Approximately 1,600 were enrolled this year and 1,323 have been admitted for hospitalization."

BUNCOMBE COUNTY MEDICAL SOCIETY

The first December meeting of the Buncombe County Medical Society was a dinner meeting, held at the U. S. Veterans Facility at Oteen on December 2. A brief business session was held, and the meeting was then turned over to the medical staff for a clinical conference program. Dr. H. W. Walter gave a case report on the "Use of Sulfathiazole Locally"; Dr. L. E. Kamin gave a paper on "Dermoid Cyst of Mediastinum"; and Dr. Benjamin Schwartz spoke on "Sulfathiazole Therapy in Staphylococcic Septicemia".

On December 20 the annual meeting and banquet was held on the Battery Park Hotel Roof, with Dr. Frank Howard Richardson as toastmaster.

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society held a business meeting on December 10 for the election of officers. Dr. C. A. Street was elected president, succeeding Dr. B. B. Pool. Dr. Fred Garvey was elected first vice president; Dr. Fielding Combs, second vice president; Dr. P. A. Yoder, secretary; and Dr. Howard M. Starling, treasurer. Delegates for the state convention in 1941 are Dr. B. B. Pool and Dr. W. H. Sprunt; alternate delegates, Drs. J. C. Castevens, Edgar Benbow, Bruce Brooks, and E. S. Thompson. Dr. Joe F. Belton was elected to the board of censors.

GUILFORD COUNTY MEDICAL SOCIETY

The Guilford County Medical Society held its December meeting on Thursday, December 5, at 6:30 p.m., in the Elwood Hotel in High Point. Dr. Phillip Davis, President, presided.

Dr. H. C. Warwick was elected Secretary to replace Dr. Wayne Benton, who has been called into military service.

The Ladies' Auxiliary met with the Society for dinner, and after a brief business session returned for the scientific program.

Dr. I. T. Mann introduced the guest speaker, Dr. William Allan of Charlotte, past President of the State Medical Society, who spoke on Prevention of Hereditary Defects. His talk was illustrated by lantern slides. He traced the pedigree of several families in North Carolina, showing the familial hereditary tendencies. Several members participated in a discussion of Dr. Allan's talk.

Dr. Phillip Davis then turned the gavel over to Dr. Fred Patterson, the incoming President. Dr. Patterson spoke briefly.

HALIFAX COUNTY MEDICAL SOCIETY

The Halifax County Medical Society held its regular monthly meeting Friday night, December 13, at the Roanoke Rapids Hospital, at which time Dr. M. C. Maddrey of Roanoke Rapids was elected president of the society for 1941; Dr. O. F. Smith of Scotland Neck, vice-president; and Dr. Robert F. Young of Halifax, secretary and treasurer.

Dr. E. C. Hamblen, well known endocrinologist of Duke University, was the guest speaker of the meeting. He was accompanied by Dr. Kenneth Cyler, an associate at Duke.

A rising vote of thanks was given Dr. F. W. M. White of Halifax, retiring president of the society, for the splendid programs he had arranged during the past year.

The Hospital Saving Association of North Carolina, Inc., is nationally approved by the American Hospital Association, and is the twelfth largest group hospitalization plan in the United States.

MISSISSIPPI VALLEY MEDICAL SOCIETY 1941 ESSAY CONTEST

The Mississippi Valley Medical Society offers annually a cash prize of \$100.00, a gold medal, and a certificate of award for the best unpublished essay on any subject of general medical interest (including medical economics) and practical value to the general practitioner of medicine. Certificates of merit may also be granted to the physicians whose essays are rated second and third best. Contestants must be members of the American Medical Association who are residents of the United States. The winner will be invited to present his contribution before the next annual meeting of the Mississippi Valley Medical Society at Cedar Rapids, Iowa, October 1, 2, 3, 1941, the Society reserving the exclusive right to first publish the essay in its official publication—the Mississippi Valley Medical Journal (incorporating the Radiologic Review). All contributions shall not exceed 5000 words, be typewritten in English in manuscript form, submitted in five copies and must be received not later than May 1, 1941. The winning essay of the 1940 contest appears in the January, 1941 issue of the Mississippi Valley Medical Journal (Quincy, Ill.) Further details may be secured from Harold Swanberg, M.D., Secretary, Mississippi Valley Medical Society, 209-224 W. C. U. Building, Quincy, Illinois.

NEWS NOTES

Dr. C. O. DeLaney died at his home at Winston-Salem on December 15.

* * *

Dr. Preston White, of Charlotte, has been elected a member of the American Clinical and Climatological Association.

* * *

Dr. H. H. Briggs, Jr., of Asheville, has been certified by the American Board of Ophthalmology.

Three Quarters of a Century for Parke, Davis & Company

The year 1941 marks the Diamond Anniversary of the founding of Parke, Davis & Company, a firm which had its inception in a small drug store in the City of Detroit, Michigan, and which, during the past seventy-five years, has become the world's largest makers of pharmaceutical and biological products.

From the very beginning, back in 1866, Parke, Davis & Company has engaged in research work with the object of making available to pharmacists and physicians medicinal preparations of the highest degree of accuracy.

In the early 70's, pharmaceutical progress meant the discovery of new vegetable drugs. Energetic—and extensive—explorations gave to the medical profession such valuable and widely used drugs as Cascara and Coca. Then, in 1879, came one of Parke-Davis's greatest contributions to pharmacy and medicine—the introduction of the first chemically standardized extract known to pharmacy. Desiccated Thyroid Gland, the first endocrine product supplied by the Company, was introduced in 1893. One year later, Parke-Davis established the first commercial biological laboratory in the United States. In 1897 came the introduction of the first physiologically assayed and standardized extracts. And throughout these early years, the fundamental Parke-Davis policy—precision in pharmaceutical manufacture—was crystallizing.

Since the turn of the century, progress of the Company has continued apace. An aggressive pro-

gram of research has been zealously pursued, marked by the introduction of such important medicinal products as Adrenalin, Ventriculin, Theelin, Pitocin, Pitressin, Mapharsen, Neo-Silvol, Antuitrin-S, Meningococcus Antitoxin, Dilantin Sodium, and many others. Diversified research activities cover the major phases of medical treatment—including the endocrine, biological, vitamin, and chemotherapeutic—and new discoveries are carefully evaluated through the Company's extensive facilities for clinical investigation.

The Company's home offices and research and manufacturing laboratories in Detroit occupy six city blocks on the Detroit Riverfront, adjacent to the Detroit-Walkerville ferry, which connects the City of Detroit with the Province of Ontario, Canada.

A beautiful farm of 700 acres, known as Parke-dale and located near Rochester, Michigan, about 30 miles from Detroit, is utilized for the production of antitoxins, serums and vaccines, and for the cultivation of medicinal plants.

In addition to its Detroit headquarters, branches and depots are maintained in important cities throughout the country, the list including Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Dallas, Denver, Indianapolis, Kansas City, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, San Francisco, St. Louis, and Seattle.

In the foreign field, to care for the Parke-Davis business which extends to every quarter of the globe, branches are located in London, England; Sydney, N. S. W.; Walkerville, Ontario; Montreal, Quebec; Toronto, Ontario; Winnipeg, Manitoba; Bombay, India; Havana, Cuba; Buenos Aires, Argentina; Rio de Janeiro, Brazil; and Mexico City, Mexico.

Through the use of full-pages in leading national magazines Parke, Davis & Company are carrying on an advertising program that has attracted wide attention. As might be expected, their advertising is unique, ethical, distinctive. They make no direct attempt to sell their products to the public by means of this publicity. In a sincere effort to render a valuable service to the medical profession, they are running a striking series of messages based on the "See Your Doctor" theme, and physicians throughout the country are constantly experiencing evidences of the results of this broad educational program.

The Beginnings of Disease.—Occupied by his interest in and respect for scientific methods, the doctor is apt to become unmindful of the fact that the beginnings of disease are insidious, cause little disturbance of function and give no detectable signs. Sooner or later they lead to the development of symptoms; the affected person feels that he is not well, and he seeks advice first at a time when the most careful examinations known will fail to disclose any objective cause for his discomfort. His subjective sensations are the earliest manifestations of ill-health. How little many of them are understood and how often they are misinterpreted! Who among physicians has not labeled such a complainer without abnormal signs a hypochondriac, a neurotic or even a malingerer, only to be embarrassed later to find that disease had developed and made him ready to subscribe to the saying of the late William S. Thayer, "After twenty years I relabel my neurotics my diagnostic errors."—Austrian, Charles R., M.D.: *The Care of the Patient*, New England J. Med. 223:696 (October 31) 1940.

In Memoriam

MEMORIAL ADDRESS

FOR ALL THE MEMBERS OF THE NINTH DISTRICT MEDICAL SOCIETY WHO HAVE DIED SINCE ITS ORGANIZATION IN 1912

Dr. James W. Davis

Statesville

My Fellow Physicians:

Again and again we are called upon to suspend our daily labor and bury our dead. Each time the solemn lesson is impressed upon our hearts that from earth we came, and into earth we must return again.

This past year has witnessed the passing of fellow physicians. Some have been cut down in the very prime of their professional life and usefulness, others in the evening of long and serviceable careers. All carried to the end the finest traditions of the sons of Aesculapius. They blended the splendid assets of servants and leaders. They have left behind them a heritage of duty well done. With rare exceptions, they were imbued with the knowledge that personal sacrifice and abnegation is a part of a doctor's daily life. Never too proud to perform the most menial duty, they were brave enough and wise enough to serve with wisdom and to lead with valor. They lived their lives and practiced their art according to their individual lights. We miss their counsel and their friendship; we sympathize with their loved ones who are deprived of their companionship and guidance; and as a Society we salute their memory and record our sorrow.

If these brothers whom we call dead could speak to us today, what words would they speak into our listening ears? Would they speak aught of the great political and economic questions which vex us? Would their words concern the grasping schemes of nations and the petty ambitions of men? Would they speak to us of party, or business, or commerce?

Nay, out of their richer and holier experiences they would speak to us in the old familiar way of the simple things of life—the things nearest and dearest to the human heart.

I think, first of all, they would tell us that we should face the future with faith, hope and courage; that we should not fear death, for at eventide there is light. They would tell us that there is a life beyond this life, and that in that life there is work to do and tasks to accomplish. They would tell us that there are sweet and unchanging friendships in the spirit land; that it is a beautiful home where there are many happy reunions, but no sad partings, land where no sorrows shall gnaw the heart nor ever a tender tie be broken.

They would remind us, too, of the nobility of sacrifice, and of the duty to minister unto others. They would tell us that the world remembers only for a while those who have been its masters, but that it never forgets those who have been its servants.

They would have us remember the spirit of American patriotism. They would tell us that the noblest thing anyone can do is to live for his country—live to make it a purer, nobler, and finer nation. And

Read at the Ninth District Medical Society Meeting, Mooresville, September 26, 1940.

they would recall the words of Proverbs: "Righteousness exalteth a nation; but sin is a reproach to any people."

They were men of incorruptible personal integrity. I suppose no man ever attempted to approach one of them with any sort of bribe. No stain was upon their escutcheon; no syllable of suspicion that I ever heard was whispered against their character. They walked in perfect and noble self-control.

They were men who believed in right, who had a profound conviction that the courses of this world must be ordered in accordance with lasting righteousness; that no nation can expect success in life except as it conforms to the eternal love of the infinite Lord.

Simplicity belonged to them. I need not dwell upon it, and I close the statement of these qualities by saying that underlying all and overreaching all and penetrating all was a profound loyalty toward the great King of the universe, the Author of all good, the eternal Hope of all that trust in Him.

May I say further that, to whatever we may attribute all the illustriousness of these men, all the greatness of their achievements, it seems to me that these successes were largely due to the moral qualities of which I have spoken. They drew to them the hearts of everyone, and particularly of those who best knew them. They called to their side helpers in every exigency of their careers.

Their high qualities drew to them the good will of their associates in an eminent degree. They believed in them, felt their kindness, confided in their honesty and honor.

While our brethren have passed away to their long home, while we commemorate their virtues and their worth, and preserve their memory in our hearts, we have yet another duty to perform. It is to remember kindly the sorrowing kindred, the fathers and mothers, sisters and brothers, the widows and orphans of our deceased brethren.

It is befitting to quote Voltaire, the French philosopher and writer, who said:

"But nothing is more estimable than the physician who, having studied nature from his youth, knows the properties of the human body, the diseases which assail it, the remedies which will benefit it, exercises his art with caution and pays equal attention to the rich and the poor."

Yes, the world is better because these departed colleagues lived. Death cannot take from us the memory of what they were and what they did.

Their work here is finished. Their spirits have departed hence to join in sweet and perfect harmony and comradeship that innumerable host of immortals who wrought faithfully and well here, and who are enjoying their just rewards on the other shore.

Peace to their ashes! Honor to their name! Immortality to their memory!

The Necessity for Art in Medicine.—The scientific physician who does not interest himself in or acquire the subtleties of the art invariably fails in the full availment of his skill and talents to the patient. The purely scientific approach to a medical problem may suffice in many instances but it is just as likely to be thwarted unless applied in a practical, humane and understanding manner, modified if necessary to meet the requirements of the individual. One sees too many frustrations resulting from the inflexible routine of strictly scientific endeavor.—F. A. Willius, M.D.: A Talk on the Science and the Art of Medical Practice, Proc. Staff Meet. Mayo Clinic 15:650 (October 9) 1940.

BOOK REVIEWS

A Textbook of Clinical Pathology. Edited by Roy R. Kracke and Francis P. Parker, Emory University, Atlanta, Georgia. 780 pages with 257 illustrations, 23 of which are in color. Second Edition, thoroughly revised. Baltimore: Williams and Wilkins Company, 1940. Price \$6.00.

This book represents the efforts of fourteen experienced teachers. Its aim is well expressed in the Foreword: "Designed primarily for accurate and comprehensive teaching of this important subject to students of medicine and the interpretation of laboratory findings for the practitioner of medicine." It is made as brief as is consistent with clarity—largely by describing "the one most reliable and simple technic for each laboratory procedure."

The whole field of pathology, so far as it concerns the clinician, is covered in a clear, practical fashion. Virtually all the newer laboratory methods are described, including the assays of hormones and vitamins, and the tests for the blood concentrations of the sulfonamides. It was rather surprising to note the statement, in discussing sulfathiazole, that "the blood concentration has been observed to rise as high as 30 mg. per cent. The effective range appears to be close to 10 mg. per cent." Perhaps some allowance should be made for the personal equation, but this reviewer does not recall ever having a concentration reported much higher than 4 mg. per cent, even with large doses; and a competent urologist reports that he is satisfied with a concentration of 2 to 3 mg. per cent.

The final chapter, by Dr. George Herrmann, is devoted to "Laboratory Examinations in Clinical Practice", and is most practical and helpful; so are the four appendices, on "Laboratory Equipment and Maintenance", "Solutions: Weights and Measures: Normal Solutions", "Bacteriologic Stains and Staining Methods", and "Preparation of Culture Media".

The book can be unreservedly recommended for both students and practitioners.

Squibb Offers Pyridoxine In Microcaps and Solution

Pyridoxine Hydrochloride (the hydrochloride of pure, synthetic vitamin B₆) is now being supplied by E. R. Squibb & Sons, New York, in two forms—Microcaps (miniature capsules) for oral administration containing 1 mg. and 10 mg. each, and aqueous Solution for parenteral administration, containing 25 mg. per cc.

Indications for Pyridoxine therapy are not well established as yet, but they include vitamin B₆ deficiency states. Limited clinical investigation suggests the use of Pyridoxine in the treatment of paralysis agitans (Parkinson's syndrome), myasthenia gravis and pseudohypertrophic muscular dystrophy.

Solution Pyridoxine Hydrochloride Squibb may be given by the subcutaneous, intramuscular or intravenous route; the Microcaps are administered orally. The suggested prophylactic dose is 1 to 5 milligrams daily by mouth. The therapeutic dose suggested is 10 to 50 milligrams daily, preferably by a parenteral route.

One mg. Microcaps are supplied in vials of 50, and 10 mg. in boxes of 20. The Solution comes in 5-cc. rubber-capped vials containing 25 mg. Pyridoxine Hydrochloride per 1 cc., preserved with 0.5 per cent chlorobutanol.





JANUARY 14, 1886

DR. THOMAS W. M. LONG

FEBRUARY 3, 1941

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SULFATHIAZOLE IN THE TREATMENT OF SEVERE STAPHYLOCOCCUS INFECTION

WALTER B. MARTIN, M. D.

and

R. BRYAN GRINNAN, JR., M. D.

NORFOLK, VA.

We have elsewhere reported our results in the treatment of severe staphylococcus infection with sulfapyridine and its sodium salt⁽¹⁾. During the past year we have had the opportunity to observe the effect of sulfathiazole on 6 cases of severe infection with the same organism. Our results with sulfapyridine were most satisfactory. Sulfathiazole, however, possesses certain distinct advantages over the pyridine compound from the standpoint of toxicity. It would seem, therefore, to be the drug of choice in the treatment of such cases if proved by clinical trials to be as effective against staphylococcus infection as is sulfapyridine.

Sulfathiazole, first synthesized by Fosbinder and Walters⁽²⁾, differs in its chemical structure from sulfapyridine in that a thiazole group is substituted for the pyridine ring. This drug is more readily absorbed from the intestinal tract than sulfapyridine, and more rapidly excreted.

Long⁽³⁾ states that, in addition to its more rapid absorption and excretion, less of the drug is found conjugated in the blood and urine, and its distribution in body fluids and exudates is similar to that of sulfanilamide.

In these respects it differs quite markedly from sulfapyridine. It is generally agreed that it is less toxic than sulfapyridine, with the single exception of a higher incidence of dermatitis. Moreover, because of its rapid excretion, toxic symptoms when they do occur are more readily controllable.

Flippin, Schwartz, and Rose⁽⁴⁾, in reviewing their findings on 200 pneumonia cases, half of which were treated with sulfapyridine and half with sulfathiazole, found nausea more than three times as frequent and vomiting two and a half times as frequent in the sulfapyridine group as in the sulfathiazole treated cases. Hematuria, drug fever, and drug psychosis were also less common in the latter group, but dermatitis was more common. The therapeutic results were approximately the same with the two drugs, with a slight differential in favor of sulfathiazole.

Carey⁽⁵⁾ has found sulfathiazole as effective as sulfapyridine in upper respiratory infection, bronchitis, and pneumococcic pneumonia. In his experience it was more effective against staphylococcus infections. Only in meningitis was sulfathiazole found less useful, owing to the fact that less satisfactory concentration can be obtained in the spinal fluid as compared to blood concentration.

Read before the Seaboard Medical Association, Washington, N. C., December 4, 1940.
Drug furnished through the courtesy of Merck and Company, Inc.

1. Martin, W. B., and Grinnan, R. Bryan, Jr.: The Treatment of Severe Staphylococcus Infections with Sulfapyridine and Its Sodium Salt, *South. M. J.* 33:1039 (October) 1940.
2. Fosbinder, R. J., and Walters, L. A.: Sulfanilamide Derivatives of Heterocyclic Amines, *J. Am. Chem. Soc.* 61: 2032 (August) 1939.
3. Long, Perrin H.: Thiazole Derivatives of Sulfanilamide, *J.A.M.A.* 114:870 (March 9) 1940.

4. Flippin, Harrison F.; Schwartz, Leon; and Rose, S. Brant: Comparative Effectiveness and Toxicity of Sulfathiazole and Sulfapyridine in Pneumococcic Pneumonia, *Ann. Int. Med.* 13:2038 (May) 1940.
5. Carey, Benjamin W.: Use of Sulfanilamide and Related Compounds in Diseases of Infancy and Childhood, *J.A.M.A.* 115:924 (September 14) 1940.

Spink and Hansen⁽⁶⁾ report from their experience 15 consecutive cases of staphylococcus septicemia successfully treated with sulfathiazole.

Poole and Cook⁽⁷⁾ have pointed out the value of sulfathiazole and sulfamethylthiazole in the treatment of staphylococcus infection of the urinary tract.

Our own experience with sulfathiazole from the standpoint of therapeutic results closely parallels that previously reported with sulfapyridine. Most impressive are those cases of severe, rapidly advancing general sepsis, which have responded to treatment.

Case Reports

Case 1. L. C., a male child, aged 2, was admitted to Norfolk General Hospital on June 28, 1940. On June 25 the patient had been seen at home by his family physician, and a small pustule was noted on the back of the head. On the next day this lesion was slightly larger, and wet dressings were applied. It was noted at that time that the child had a slight fever. On June 27 the area was considerably enlarged and there was beginning edema of the surrounding area of the scalp. On admission to the hospital the infected area was incised and drained. When seen by us on June 29, the child appeared desperately ill and toxic. The temperature was 105.4 F.; pulse, 130. The principal finding was an extensive area of cellulitis and edema beginning at the hair line in the back and extending forward to the frontal region. The veins of the scalp were thrombic and cord-like and studded with pustules. There was no cervical rigidity. Kernig's sign was negative. The lungs were clear and the heart was normal. The leukocyte count was 11,100, with 83 per cent granulocytes. The erythrocytes were 3,870,000 and the hemoglobin 68 per cent. A blood culture taken the previous day showed many colonies of *Staphylococcus aureus* on the plate. A culture from the wound also showed the same organism. The patient, weighing 29 pounds, was immediately placed on sulfathiazole, $\frac{1}{2}$ tablet ($3\frac{3}{4}$ grains) every three hours. This was later increased to $\frac{1}{2}$ tablet every two hours for one day, and then returned to the former dosage. This repre-

sents a maximal dosage of 1.6 grains per pound and a minimal dosage of 1 grain per pound. The highest concentration reached in the blood was 4.6 mg. per 100 cc. on July 2. On July 2 the patient was given 150 cc. of citrated blood. The blood culture was still heavily positive on June 30, and on July 2 there were still a few colonies on the plate. Thereafter, the blood cultures were negative. The clinical condition of the patient rapidly improved, and on July 8 the temperature range was from 100 to 101°. The following day the temperature rose sharply to 104.2°. It was felt that this temperature rise was probably the result of drug intoxication. With the withdrawal of the drug there was a prompt fall in temperature, and from then on the patient made an uneventful recovery.

There were no toxic effects of the drug except hyperpyrexia. The anemia was not out of proportion to the severity of the infection. The albumin decreased during the course of treatment, and at no time were red blood cells found in the urine. No skin rash appeared. Subsidence of the cellulitis accompanied the other signs of improvement. Several small suppurated areas along the course of the thrombic veins were treated by superficial incisions, but otherwise recovery took place without surgical intervention.

Case 2. A white male, aged 54, was admitted to Norfolk General Hospital on June 18, 1940. He presented a typical generalized exfoliative dermatitis that had recently developed, a few days after a third dose of neoarsphenamine. A general survey revealed no significant finding other than the skin condition. A systolic mitral murmur was noted, which, to the patient's knowledge, had been present for a number of years. The hemoglobin was 102 per cent; erythrocytes 5,200,000; leukocytes 9,600; nonprotein nitrogen 30; icterus index 4. The urine was negative except for a faint trace of albumin. He remained in the hospital for two days. During his stay there his temperature varied from 98 to 99.8 F. He was given calcium gluconate, intravenously, and returned home for continuation of treatment. Three days later, on June 23, he was readmitted to the hospital with a temperature of 104° and a history of repeated chills during the past two days. He appeared extremely ill. His physical examination was essentially the same as on the previous admission. The skin was more edematous and showed general exfoliation. The hemoglobin was 94 per

6. Spink, Wesley W., and Hansen, Arild E.: Sulfathiazole, J.A.M.A. 115:840 (September 7) 1940.

7. Poole, T. L., and Cook, E. N.: Sulfathiazole and Sulfamethylthiazole in Treatment of Infection of the Urinary Tract, Proc. Staff Meet. Mayo Clinic, 15:113 (February 21) 1940.

cent; erythrocytes 4,800,000; leukocytes 14,000. His urine was negative except for a trace of albumin. The patient was thought to have a general sepsis, which, in view of the widespread skin condition, was believed due to staphylococcus infection. He was started the following morning on sulfathiazole, 90 grains per day. A blood culture taken on admission was positive for *Staphylococcus aureus* the following day, and a second blood culture on June 24 showed a single colony of the same organism. Thereafter, there were four negative cultures. A maximal concentration of 7 mg. per 100 cc. was obtained in the blood. Immediate improvement followed. On the second day the maximal temperature rise was 103.2°; on the third day, 102.4°; and on the fourth day, 100.4°. The dosage of sulfathiazole was first reduced and then, on the tenth day, was discontinued. On the thirteenth day the temperature rose again, finally going to 103.8° on the fourteenth day, when sulfathiazole was resumed and continued for twelve days. Following the second administration of the drug the temperature rapidly fell and the patient made a smooth recovery.

Aside from the control of the septicemia and the subsidence of the symptoms of acute infection, the most striking effect of treatment was that noted in the skin. The edema and exfoliation improved greatly during the first course of treatment, but recurred during the relapse. During the second course of treatment there was striking and rapid subsidence of the skin lesion, and by the twenty-sixth day of the disease, when the patient was discharged, the skin was practically normal.

Serious consideration had been given, when the treatment was begun, to the possible ill effect of the drug on the skin of a patient already suffering from generalized exfoliative dermatitis. In the face of a general sepsis, however, it was felt necessary to take the risk of further injury to the skin. The resulting effect on the skin lesion was surprising and gratifying and raises the question as to whether the chronicity of arsenical dermatitis is not as much due to secondary infection of the edematous damaged tissue as it is to the residual effect of arsenical poisoning. It is suggested, in view of the known effectiveness of sulfathiazole and sulfapyridine against staphylococcus infection, that these drugs may be useful ad-

juncts in the treatment of exfoliative dermatitis.

Case 3. A 43 year old female was admitted to Norfolk General Hospital on August 4, 1940, for treatment of right renal colic. Her temperature on admission was 100 F. Her urine contained pus and red blood cells. The nonprotein nitrogen was 43. The white cell count was 9,600, with 79 per cent granulocytes. X-ray of the urinary tract revealed a stone impacted in the right ureter. On August 6 cystoscopy was performed and a catheter was passed beyond the obstructing stone. The following day the patient had repeated chills. Her temperature rose rapidly to 104°, and then to 106.6°. Blood cultures taken on August 7 and 9 showed many colonies of *Staphylococcus aureus*, and the catheter urine was positive for the same organism. Since the patient was vomiting persistently, she was first started on sodium sulfapyridine, but this was changed to sulfathiazole after the vomiting was controlled. The patient improved rapidly. On August 8 her temperature reached 106°; on August 9 and 10 it was 103°; and after that it ranged from 100 to 101° until August 21, when it subsided completely. On August 12 a blood culture was negative, and subsequent cultures were all sterile. The maximal concentration of sulfathiazole reached in the blood was 4.1 mg. per 100 cc. and there were no toxic manifestations.

Case 4. A white female, aged 25, was admitted to Leigh Memorial Hospital on June 29, 1940, with evidence of an infected abortion. Her temperature pursued an irregular course, with occasional rises above 104°. On the fifth hospital day, when she was first seen by us, her temperature was 104.2° and a blood culture was positive for *Staphylococcus aureus*. On this day sulfathiazole was begun, in doses of 90 grains per day, and was continued for twelve days. A maximal concentration of 8 mg. per 100 cc. was obtained. Two subsequent blood cultures were negative, and there were no further chills. The patient's temperature gradually subsided, becoming normal on the tenth day after the drug was started. The local pelvic condition cleared up rapidly and she was discharged from the hospital on the twelfth day after the initial treatment. The only other important treatment was one transfusion of 400 cc. of blood. She had no evidence of toxic reaction except the temporary appearance of red blood cells in her

urine. On discharge there were still occasional red cells to be found. The albumin, however, had cleared up, and there were no casts. She had a mild secondary anemia at the onset of her treatment, and this improved while she was under treatment.

Case 5. A white woman, aged 53, was admitted to St. Vincent's Hospital on October 29, 1940, because of the breakdown and necrosis of the scar of an old operative wound. Three months before admission it was discovered that she had diabetes mellitus. She had been placed on a diet without insulin. Twelve days before admission, swelling and soreness were noticed about the old operative wound, and one day before admission the area became necrotic, broke down, and discharged a foul pus. In addition to the above, she gave a history of swelling of her feet and ankles. The chief findings on admission, other than the lesion of the abdominal wall, were obesity, mild myocardial failure due to arteriosclerosis, enlargement of the liver, edema of the ankles, and absence of pulsation of the arteries in the lower extremities. The lesion of the abdominal wall measured 3 to 4 inches across and was characterized by redness, tenderness, and deep induration. There was an area of central necrosis occupying the site of the old abdominal scar. She was afebrile. The laboratory found no anemia; a leukocyte count of 11,950, with 80 per cent neutrophils; and a blood sugar of 476 mg. per 100 cc. Because of the spreading character of the wound into the fat of the abdominal wall in this patient with diabetes and myocardial weakness, it was judged best to place her on sulfathiazole. She was started on 90 grains a day; after three days this was reduced to 45 grains, and was omitted on the seventh day. The redness and tenderness surrounding the area rapidly disappeared and the induration subsided, with the exception of a small area at the top of the wound. Locally, after much necrotic tissue was trimmed away, the lesion was first treated with gentian violet and later with sulfathiazole powder. The powder seemed to clean the wound out well, leaving a healthy, healing surface. At present there is a clean, granulating surface that is healing from the bottom. The diabetes was easily controlled by insulin and diet.

Case 6. A white woman, aged 73, was admitted to St. Vincent's Hospital on November 1, 1940, because of the presence of a

large carbuncle on the side of the scalp. This was complicated by an uncontrolled diabetes and by hypertension. The history she gave was that two weeks before admission she noticed a boil on the left side of her scalp. One week before admission the area began to increase greatly in size, with general reddening of the scalp on the left. The laboratory found, on admission, a mild anemia; a leukocyte count of 15,000, with 80 per cent neutrophils; a blood sugar of 200 mg. per 100 cc.; and a nonprotein nitrogen of 21.4. Because of the patient's age, the extensiveness and site of the carbuncle, and the presence of diabetes, she was placed on sulfathiazole and given x-ray therapy. The sulfathiazole dose was 90 grains a day for two days; this was reduced to 45 grains a day for four more days, and omitted on the seventh day. The carbuncle pointed in several places, and when these were opened a little pus exuded. The area was quite vascular, and when traumatized, bled freely. During the first week, the lesion subsided at the periphery, the redness surrounding the area was greatly reduced, and the soreness subsided. During the last week, the lesion has been drying up, and is rapidly healing. The diabetes has been well controlled by diet and insulin.

Discussion

The results obtained in these cases are in accord with the reports of others, and help to confirm our knowledge of the effectiveness of sulfathiazole against infection with *Staphylococcus aureus*. In our experience sulfathiazole is no more specific against this organism than is sulfapyridine, but because of the lower incidence of nausea experienced during its use, it can be more regularly administered by mouth. No serious toxic effects have been encountered. We would again emphasize the importance of the early diagnosis and treatment of cases of fulminating staphylococcus sepsis before serious secondary foci have been set up. In case 1, in spite of a heavy blood stream invasion, there was no involvement of the lungs, bones, or joints.

We wish to emphasize the danger inherent in the use of the sulfonamide group of drugs, and also the hazards that may be avoided by proper care. During the past year we have seen 9 cases in which serious complications had arisen, and in three of these death resulted. In one case (our own) of influen-

zal meningitis, death occurred with complete disappearance of the granulocytes after the patient had apparently recovered from the original condition. In two cases death resulted from toxic hepatitis. In two other cases toxic hepatitis was detected fairly early and the patients recovered. In one case there was a severe hemolytic crisis, with jaundice, followed by recovery. In one case an extensive toxic encephalitis was observed, with retinal hemorrhages and a bloody spinal fluid. This patient recovered without evidence of residual damage. One case showed marked toxemia, with chills, high irregular temperature, enlargement of the liver and spleen, and moderate anemia. In the ninth case the patient pursued a prolonged febrile course that was terminated promptly by the withdrawal of the drug. Rather curiously, no other toxic manifestations were noted in this case, although the patient was an aged diabetic.

These experiences are recorded to emphasize the importance of considering carefully in each case the relative danger of the disease and the therapeutic agent to be administered. If, after due consideration, one of the drugs of the sulfonamide series is employed, the patient must be observed carefully throughout the time of its use. It has been our practice to make hemoglobin-leukocyte determinations and microscopic urine examinations daily or every other day during the first week, and at longer intervals thereafter. Early detection of toxic symptoms may be of life-saving importance.

Conclusion

Sulfathiazole in adequate dosage is effective in the control of serious staphylococcus infection.

The Need for Students in Medicine.—There is a real need for men with broad minds, who, considering their formal medical education merely as the tools with which to start, continue as students all their lives; men who are critical of tradition and, as well, are critical of the new; subjecting each so-called advance, each new drug, each new method of treatment to careful scrutiny and to serious study before applying it generally to their patients. There is a great need for men who, remembering the Hippocratic teachings, realize that in spite of the laboratory, there is no substitute for a careful study of symptoms and history and a thoughtful general examination of the individual. — Warner S. Bump: *Medical Opportunities in a Small Urban Community*, Wisconsin Medical Journal, 39:976 (November) 1940.

SYMPOSIUM ON PEDIATRICS

THE ART OF PEDIATRICS

SAMUEL F. RAVENEL, M. D.

GREENSBORO.

"It seems an act of supererogation as extreme as the classic example of such things, the bringing of coals to Newcastle"⁽¹⁾, to present to this section a discussion of the art of pediatrics, since before me sit only exponents of this very art. However, "precisely for this reason a sympathetic and intelligent hearing is assured."⁽¹⁾

In St. Paul's Cathedral an inscription on the simple tomb of its architect, Sir Christopher Wren, reads, "Stranger, if you seek a monument, look about you." Paraphrasing that, I say today, "Stranger, if you seek to learn of the art of pediatrics, look about you and find it best exemplified in the person of a Sidbury, a Root or a Lesesne Smith."

"Life is short, the Art is long . . ." So wrote Hippocrates⁽²⁾ 2,000 years ago. Seldom does one find the maximum development of the art before fifteen or twenty years of practice. The tempering of youthful enthusiasm with judgment, the widening by constant study of the horizons of clinical knowledge, the bitter lessons indelibly burned into memory by tragic errors (he who makes no mistakes makes no progress), a zest for practice, a love of people and of the age old battle against disease and death—all these are steps in the making of a clinician. "Swift and wise decisions have a clear relationship especially to length of experience." (Ryle)⁽³⁾.

The science of medicine deals with equations and mathematical formulae, with the chemistry of body fluids and milligrams of phosphatase; the art with problems of heredity and environment, of happiness and security, of hygiene and diet, of infection and resistance.

Every successful clinician possesses the ability to "play a hunch". Some have this faculty of apparent clinical intuition developed to an amazing degree. How else may one explain the astonishing consultative brilliance of those men who are able

Read before the Section on Pediatrics, Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

1. Cheever, D., in *J. A. M. A.* Vol. 114, No. 4 (January 27) 1940.

2. Hippocrates: First aphorism.

3. Ryle, John H., in *Lancet*, May 13, 1939.

regularly to cut through a Gordian knot of confusing facts and arrive unerringly at a prompt and exact diagnosis? The basis of this, of course, as Ryle⁽³⁾ says, "is not innate or intuitive but a complex faculty built on prolonged training and exercise of the special senses, with a sound knowledge of pathologic possibilities. Observational ability and habit, a retentive memory and aptitude for sifting and correlating experience are the main ingredients of this clinical sense."

Pasteur wrote: "Chance favors the prepared mind." Your true clinician attempts unconsciously to live up to the Boy Scout motto "Be Prepared", and by constant study and thought to make ready for any situation that may arise in practice. For example, in recent years and months he has mastered completely the *authoritative* literature on the sulfonamide drugs so that as they became available they could be utilized to the fullest extent within the limits of safety. But almost surely he respects the dictum, "Be not the first by whom the new is tried, nor yet the last to cast the old aside."⁽²⁾

There is a part of medicine which has to do with money, another which deals with the body, and a third which is concerned with the intangible things of the spirit. As Mencken⁽⁴⁾ says, your true clinician "clings tenaciously to certain moral ideas which have been formulated . . . in the course of long centuries. One . . . is the idea that the sick poor ought to be treated tenderly, 'without money and without price', and restored to health if possible." "Suffer little children to come unto me and forbid them not . . ." So spoke the great Healer⁽⁵⁾. It is probable that if every doctor in America answered affirmatively that ageless query, "Am I my brother's keeper?", to the extent that our best pediatric clinicians do, the specter of Socialized Medicine would be laid and Compulsory Health Insurance would no longer appear as the handwriting on the wall.

To the purely scientific eye of the specialist, an infected tonsil with its load of streptococci and the therapeutic implication is apt to loom disproportionately large. The true clinician sees the tonsil in the whole child, and the youthful patient in his entire environment, buffeted by fate and acted upon by the myriad forces of a complex modern life that may distort the body, warp the soul,

and shatter the spirit. Again, as Ryle⁽³⁾, says, "This estimate of the whole patient and his reactions to his illness may tell more in diagnosis, prognosis and treatment than . . . all the details of a modern 'complete examination' with its attending expense . . ." Peabody⁽⁶⁾ expresses beautifully the relationship of our "Beau Ideal" of pediatrics to the laboratory: "The physician should not . . . depend for the interpretation of (laboratory findings) on the man who does the laboratory work . . . The clinician himself should be able to appraise the laboratory findings if the patient is to derive the greatest benefit." Again, "the need in clinical medicine continues to be not for better technicians, but for better clinicians." And, finally, "what is really needed in the application of laboratory methods to the practice of medicine, is not a knowledge of more technical procedures but a much more exact knowledge of a few."

Our clinical artist often must overcome parental influence while nature cures the ills of the child. This feat may require the wisdom of the serpent, the strength of a lion, and the patience of a Job. Some clinicians get away with a Hitler handling of parents, a veritable "Blitzeltern"; others employ the guile of a Farley; while a few are able to drag a herring across the parental trail in the best F.D.R. manner. In any event, every successful clinician has developed his own method of managing parents, who are often, to borrow a baseball expression, "too hot to handle".

Our shining paragon of all the pediatric virtues must, as we have intimated, consider the psyche as well as the circulation of his youthful patients. At times, one obtains the impression, in certain quarters, that a psychiatrist is considered as necessary now to juvenile mental health as a slide rule was once in calculating a formula. There is almost a unanimity of opinion among pediatricians in regard to the great value today of *sound* child guidance as an integral part of clinical practice; but some possibly agree with me in feeling that, upon occasion, a switch in the hand is worth two psychiatrists in the bush when dealing with the modern uncontrolled child.

From the beginning of pediatrics in this country, 13 years has been its upper age

4. Mencken, H. L., in Baltimore Sun, July 28, 1937.
5. St. Mark, 10:4.

6. Peabody, F. W.: Doctor and Patient, New York, The Macmillan Company, 1939.

limit. Children of 13 are supposed to be adults and are turned over to "grown-ups" doctors, who, as Powers⁽⁷⁾ says, "are rarely by interest, training or temperament adept in handling the problems of childhood." I have long felt that the jettisoning of these hapless children at the very time they are beset by the complex and difficult problems of puberty and adolescence is cruel and unjustified. The prop of confidence and security built up during an association of thirteen years is removed at the very moment that it may be most sorely needed. The future White Knight of clinical pediatrics will, I believe, at one and the same time smooth the "acned" brow and soothe the anguished soul of adolescence without slavish regard to exact chronological age limits.

The metamorphosis of fledgling pediatricians into confident, wise, powerful, but gentle clinical warriors may be summarized thus. The majority start off with relatively the same equipment as to intelligence, education, special training. This initial pediatric armament may be compared to a crude bar of iron, which, sometimes, is wrought in the fire of competition and on the anvil of experience, by the grace of God and by the hand of man into a shining sword, a true Excaliber, to fight disease and to cheat death. When this occurs, history affords no parallel of a finer weapon wielded by nobler hands in a greater cause.

7. Powers, G. F., in *Yale J. Biol. & Med.* Vol. 12, No. 1.

The Placebo.—The placebo has no place in medicine unless it be given in answer to the cry of an anxious family that some medication be given. Prescribed solely to satisfy a patient, such treatment is a therapeutic lie and lays a foundation for mistrust or disillusionment, and is a poor substitute for re-education. More than thirty years ago, Doctor Richard Cabot cited an illustrative case to a group of us who were students at the Massachusetts General Hospital. A neurotic young woman came to the dispensary complaining that she had a frog in her stomach. The diagnostic study showed nothing physically wrong. Perhaps pressed for time, lazy, or possibly mistrustful of his therapeutic ability, the physician on duty prescribed methylene blue, indicating that the medicine would dissolve the amphibian. He told the lady proof of the successful action of the drug would be visible to her—she would void green urine. She did and was convinced! But the therapeutic triumph had only a brief day. Within a short time the patient returned more distressed than ever. "Doctor, my first frog was a female—she laid eggs before she was dissolved, and now the tadpoles make me feel worse than their mother did!" Nor could she be convinced that her first gastric tenant was a male!—Austrian, Charles R., M.D.: *The Care of the Patient*, New England J. Med. 223:699 (October 31) 1940.

THE SCIENCE OF PEDIATRICS

D. L. SMITH, SR., M. D.

SALUDA.

I have been asked to write a paper on the science of pediatrics. A colleague has been asked to talk on the art of pediatrics. Where the line can be drawn between science and art, I am at a loss to know. I am afraid I shall encroach many times in this talk on the art of pediatrics.

The science of pediatrics, or at least the high degree of scientific knowledge of the diseases which affect children, has been developed within the past thirty years. As I have been practicing during this period, I naturally begin to retrospect, and I wonder how we ever did get any results in our early experiences. However, at times I feel that pediatrics has become too scientific in many ways.

The most striking example, in my opinion, is the giving of artificial food to children in the nurseries to prevent the normal loss of weight during the first few days. In general, I think the nursery is an abomination and should be abolished. The majority of mothers delivered in hospitals are unable to nurse their babies successfully because of the highly scientific treatment in the hospital nursery. Maybe the pendulum will swing back, as it has in other so-called advances.

Another criticism I have of present day pediatrics in the new-born is the saving of many infants who should die, but who are now either epileptics, mental defectives or bedridden beings for life.

During this period of progress many supposed discoveries have been made which have later been proven false. To illustrate: I was visiting a prominent New York clinic in 1920 when I was shown an organism under the microscope which was said to be the cause of sleeping sickness. Later, this organism was disproven. On the other hand, I had the pleasure of witnessing the first lateral ventricle puncture, performed by Dr. Peterman in 1914 at the Mt. Sinai Hospital. This has become a common and useful procedure.

Thirty years ago, our greatest problem in scientific pediatrics concerned the science of feeding; and it took an expert mathematician to figure out formulas in those days. I recall visiting one of the children's clinics in Boston where they had twenty babies on

scientific formulas, and all of them failed to gain. They were all fairly healthy children, and the staff was trying to ascertain the best formulas. The babies were kept restrained in bassinets all day long. I asked the head nurse if she would let a few of these babies play on the floor for a certain number of hours each day. In making rounds five or six days later, it was found that the group that were allowed to play on the floor had made rapid gains as compared with the restrained group. The attending physician was greatly impressed with the gain and remarked to the group making rounds with him that the formulas of these children were evidently suited. The head nurse slipped up behind me and told me that the gain was the result of my suggestion. We now know, of course, that children must have sufficient exercise, and we have discarded the slide rule.

In 1916, a brilliant paper was read on the cure of diarrhea. Treatment was determined by the type of infection the child had. There were two types of infection, and the type could very easily be determined by culture of the stools. Many of us followed this method for two years with no appreciable results, but with great hopes. Later the author admitted that he was wrong with his hypothesis, as many of us had already concluded.

In 1914, the disease we all dreaded most was infectious diarrhea or dysentery in children. Seventy-five per cent of these patients died within a few days of the onset. I have seen many children develop dysentery at 10 o'clock in the morning and be in the hands of the undertaker by 10 o'clock at night. When dysentery would break out in a community, frequently there would not be a child left under two years of age. Now we rarely see infectious diarrhea and when we see it, we are sure of a cure in sulfathiazole, with the aid of other methods at our command.

When I began to practice pediatrics, we knew very little about blood counts and their significance in regard to disease in children, nor was there much use or interpretation of x-rays. These and other laboratory aids have been developed to a surprising degree of accuracy, and I am afraid that many of our students are taught to rely too much on these rather than on clinical observation. Only a few days ago, a baby 8 months old was brought to my office. This child was blue, and would cease to breathe at intervals.

X-ray examination revealed an enlarged thymus, and with intensive x-ray treatment, the child became normal. The mother remarked, when she was in my office a few days ago, that she thanked God for the advancement of medical science. I told her that twenty years ago we would not have been able to make this diagnosis.

Because I try to teach my interns to use their sense of observation and to inquire into the background and history of a case, and to use x-ray and laboratory work only as a check, I have the reputation of being an "old foggy" opposed to these modern scientific methods; but I feel sure that I use the laboratory and x-ray far more than many of you younger men suspect.

In consultation work, I never allow my consultant to give me any information in regard to the laboratory and x-ray examinations until I have completed the physical examination and history taking, as I do not wish to have my judgment clouded. After making my own observations of the child, I look at the x-ray, blood work, etc., and then consult with the physician and get his ideas as to the case.

Most of us who are practicing pediatrics have very little opportunity to advance the science of pediatrics. We have to rely on the men working in the universities for information, and we deeply appreciate the work which they are accomplishing.

The science of pediatrics today is so different from that of yesterday that one wonders what tomorrow will bring. In the treatment of children, the five great advances I have witnessed in my thirty years of practice are:

- (1) Simple feeding of children.
- (2) The discontinuing of the use of calomel and castor oil in children.
- (3) The more common use of blood transfusions.
- (4) The administration of parenteral fluids.
- (5) The introduction of sulfanilamide and sulfapyridine.

I have seen a gradual decline in the death rate of children under 1 year of age from an average of over 110 per 10,000 to less than 60 per 10,000.

Abstract of Discussion

Dr. J. LaBruce Ward (Asheville): This is a splendid paper Dr. Smith has given us. I am going to comment on just one feature of it, and that is his reference to the care of the new born baby in the nursery, particularly in regard to the so-called prelacteal feeding. I think that this has had

more to do with the failure of mothers to nurse their babies than any other one thing. Why so few mothers are able or willing to nurse their babies nowadays, I don't know. But I think that that is, at least, one reason, because the baby is not hungry when it goes to the breast. Nature intended that baby, for some reason best known to herself, to be hungry for two or three days. If she hadn't, she would have put milk in the breast of the mother when it was born. Without prelacteal feedings, the baby will certainly go to the breast hungry and will nurse hard and encourage the flow of milk. I have talked to any number of men who believe in prelacteal feeding, and they have never yet given me any good reason why it should be used. Their only answer is, "We can show you a group of a hundred babies who haven't lost weight." Do we want to keep them from losing weight? I say no, that it is a normal process.

Dr. L. W. Elias (Asheville): I am thoroughly in accord with Dr. Ward and Dr. Smith about giving nature as much chance as possible. I used to do general practice and obstetrics and I thought I got better results by giving nature a chance, and using forceps as little as possible, contrary to what some are advocating and practicing today.

I don't want to discuss the whole paper, but there is one thing I would like to emphasize that might have grown out of his paper, and, also, out of a paper I heard at the Public Health Session, in which it was stated that the stay in the hospital was one means of educating the public as to the things that should be done for the health of the community. Many hospitals are not kept in a very sanitary condition, and furnish bad training for people who go there. Frequently in the children's ward the shades are kept down and the transoms closed.

Dr. Smith suggested that we often get into habits just because it is convenient, and forget that we are not only to help the baby but to train the public. If the mothers take the babies home and put them in dark places out of the air and light, I think we have done a dis-service to our patient and to the public.

Dr. G. W. Kutscher (Asheville): One point I'd like to add in the way of discussion is the advice that mothers get from nurses. We have had a good deal of trouble with some of the queer ideas that mothers have. I finally questioned several of them and found they get the advice from the nurse. They haven't asked the doctor.

Dr. D. L. Smith, Sr. (Saluda): I think every child that is born ought to be put in the bedroom with the mother. When the mother hears a child crying in the nursery, she knows it is her baby, and she is nervous and upset all the time. Until we get the obstetricians to take that viewpoint, we are not going to get anywhere.

I intended to bring in something about canned foods in my paper. We ought to use the fresh foods whenever we can. I think it is the line of least resistance for mothers to use so many canned foods for their children.

I remember a remark I made to a man who was detailing strained vegetables. I said, "You know, our children are not allowed to walk now; they ride in a car all the time. They have lost the art of walking, and now they are going to lose the art of digestion because the food is pre-digested." Canned foods do serve a purpose, but I think they have made digestion too easy for these babies.

Another thing that I find very common in all "scientific pediatrics" is to boil water given to children. I don't allow any water given to my children, except where they are using well water, to be boiled. The baby takes cold water much better than boiled warm water.

PEDIATRIC ECONOMICS

B. W. ROBERTS, M. D.

DURHAM.

With the present public pressure on the medical profession, a critical examination of our relations with the public is forcing itself upon us. To examine ourselves objectively and subjectively at any time is not unhealthy, and this fits in with the trend and scope of all the papers in this section.

Individually, each man should look to his own sphere of influence wherever it may be found. The high regard the medical profession has for so long enjoyed—a good will that in no small part makes the financial rewards what they are—is based on the integrity and ability of the men in the profession, and I think only slightly less on the charity we do. The social and political forces now active are going to demand a fuller health service for the indigent and unfortunate—if not at the expense of the government, then at a price the poor can pay. The pediatrician is subjected to the economic forces affecting medicine in general, and in turn is subjected to an economy peculiar to his specialty. I shall mention chiefly the economic factors peculiar to pediatrics.

Young people have the babies, and young people are not as well established financially as older people. This is favorable to the young pediatrician beginning practice, because young people know and associate with young people.

Because children grow out of our age limits, there is a relatively large turnover in our patients, and that makes it essential that we have a steady accretion to our practice.

There are few procedures in pediatrics that can command large fees other than diagnostic surveys and transfusions; consequently the fees are consistently minimal.

We are denied fracture work and the minor surgery that so many general practitioners do. We are cut off from the elderly chronic invalids and their insurance, from industrial work and contract practice, and from insurance examinations—so many of the small fees that in the aggregate are of importance.

The public health and school authorities are invading our precincts, seizing what they can, constantly trying to enlarge their sphere. We in complacent dignity time and again acquiesce to abilities that are not our

equal. We must realize, however, that their place is large and essential.

In our relations with the public our fees are an economic consideration that might be studied. To this end I have sent a questionnaire to most of the pediatricians of the state. I missed a few whom I have later thought of and whose pardon I ask for not inquiring into their finances. I assure all who answered the questionnaire that their identity is lost and has never been known to me.

We should examine the finances of our specialty in order to give pediatricians a fair return for our indefatigable work and at the same time protect the public from a burdensome over-charge. We should make enough to insure savings for old age and for the education of our children and for a good home. Beyond that, should a doctor charge to the point that he becomes wealthy when all whom he serves are poor; or should not he become wealthy if all whom he serves are wealthy? Certainly the profession has in most cases been considerate in its charges and fitted them to the ability to pay.

I obtained the following data from the questionnaires sent out:

No. 1

What do you charge for:

1. Office visits? \$2.00—9; \$3.00—15.
2. Night visits? \$5.00—19; \$3.00—2; \$5.00—\$10.00—3.
3. First visits? \$5.00—8; \$3.00—7; \$4.00—2; \$5.00—10.00—2; \$3.00—5.00—5.
4. House visits? \$3.00—17; \$4.00—3; \$3.50—\$5.00—3; \$5.00—1.

No. 2

What do you charge for:

1. Diphtheria toxoid? \$1.00—3; \$2.00—15; \$3.00—2; \$5.00—2.
2. Smallpox vaccination? \$1.00—5; \$2.00—14; \$2.50—1; \$3.00—3.
3. Shick test? \$1.00—8; \$2.00—13; \$2.50—2.
4. Tuberculin? \$1.00—7; \$1.50—1; \$2.00—14; \$2.50—1; \$5.00—1.
5. Dick test? \$2.00—generally; few replies.

No. 3

What do you charge for:

1. Complete physical examination? \$2.00—3.00 & lab.—8; \$5.00 & lab.—9; \$5.00—10.00 & lab.—3; \$10.00—25.00 lab. incl.—4.
2. Hospital work per day? \$2.00—1; \$3.00—6; \$4.00—3; \$5.00—8; flat rate—5.
3. Transfusions? \$15.00—4; \$25.00—9; \$20.00—\$50.00—7; flat rate—2.
4. Opening ears? \$2.00—5.00—2; \$3.00—3; \$5.00—9; \$10.00—3.
5. Intravenous fluids? \$10.00—2; \$5.00—20.00—1; \$3.00—5.00—1; \$5.00—10; flat rate—8.

No. 4

Do you charge

1. More for longer visits? Yes—2; no—22.
2. For telephone calls? Yes—1; occasionally—3; no—20.
(One doctor did charge and it took five years to recover from the damage.)
3. Is there an additional charge when two children are seen on one visit? No—9; yes—14; \$1.00—13; charged in office only—4.

No. 5

Do you care for babies on a monthly basis?

- Yes—6.
(\$5.00 per month usual charge. Total for all 6 men on this basis—70 babies.)

No. 6

1. Do you have an associate or an assistant? Yes—9; no—14.
2. Do you have an office technician? Yes—9; no—14.

No. 7

Do you do:

1. Tonsillectomies? Yes—2; no—21.
2. Circumcisions? Yes—12; no—11.
3. Is any substantial part of your income from tonsillectomies and circumcisions? No—23; yes—1.

No. 8

1. Do you have any income from the operation of clinics? No—11; less than \$250—8, \$250—\$750—5.

No. 9

Income 1939 (20 answers)

- Under \$5,000—2; \$5,000—\$8,000—9; \$8,000—\$10,000—2; \$10,000—\$15,000—6; \$15,000—\$20,000—1.

No. 10

Average Income

- Under 10 yrs. of practice \$8,000
10-15 yrs. of practice - 10,000
15-20 yrs. of practice - 8,000
20-30 years of practice
1 nearly 20,000; 3 average 4,500
Over 30 yrs. of practice 6,700
Average income for all
(24 replies) - - - 8,800
All 1939 incomes reported increased over 1935, with one exception.

No. 11

Average Office Expense

- Without technician—\$120.00; with technician—\$178.00.
Under \$100—4; \$150—200—8; \$100—150—5; over \$200—7.

No. 12

Percentage of Charity Work

1. Office—average estimate - - - 21%
2. House—average estimate - - - 14%
3. Hospital—average estimate - - - 38%

This study shows a marked disparity in some charges and a marked similarity in others. It seems that time and custom and the fact that some charges have reached a common level would make them satisfactory to all concerned. Where there is marked variation they should be stabilized.

It is suggested that the State Pediatric

Society might appoint a committee to study our charges and to give a recommendation for these charges. An office fee in Charlotte should not differ from an office fee in Raleigh for people in the same economic status—that is if the patient gets the same standard of services in both places, and I believe he would.

Abstract of Discussion

Dr. Arthur H. London, Jr. (Durham): Dr. Roberts has given us a very timely and a very excellent paper, and I hope it will bring some results. Those of you who attended the American Academy of Pediatrics in Cincinnati heard a similar subject discussed, and those of you who read the *Journal of Pediatrics* and read the report on the round table discussion on economics, see that the Academy is interested in it.

I think the figures that Dr. Roberts has brought out, and the surprisingly low income for specialists, should cause us to take a great deal of thought. If he would work out your net income, I think he would find that it is far below the average of the general practitioner.

The man in a small town is not making over \$8,000 a year. There is something wrong with that, and I think the fault is with ourselves. We have started this thing off. The specialty of pediatrics in the South wasn't very well accepted in the beginning, and of necessity we set our fees low. If we could have some coordinative effort, I think we could at least increase our fee so as to increase our income. That may eliminate some of the people who are coming to us as practitioners. The people who can't afford to pay a fee can come to the clinics free, and eliminating that part from the office will give us more time to do work on our own private practice.

The Academy is taking a great interest in this subject, and a great many plans are being considered. This is all a plug for the Academy. I think if all the men whose credentials are such that they can join the Academy would do so, and with the national effort, put on some local effort in the state, we could help the financial status.

Dr. Aldert S. Root (Raleigh): Dr. Marion once told me that North Carolina had the best organized pediatrics force of any state in the Union, with the exception of Texas. We are general practitioners among babies, so we can't expect to have much more of an income than the general practitioner—particularly, when such a large percentage of our work is charity. After all, it seems to me that we must have the greatest satisfaction of any group of people, because we have the opportunity of doing so much good among these charity cases and in educating the public. I don't see much hope of our increasing our income very much. I think we would do a great deal of damage to the people who want us and who need us if we put our prices beyond their reach.

The only hope, I think, of our having a large income is to have the Government pay us something for looking after these children. I am not advocating Government management of medicine; that is our job. On the other hand, I think they ought to provide for the indigent children, and I think that we pediatricians ought to share liberally in that.

Dr. M. Y. Keith (Greensboro): I think that pediatricians should have their fees at a definite level throughout the state. I find that in some towns

they are charging \$2.00 for a general office visit, and in some, \$3.00.

Because of our limitations our income is far less than that of general practitioners. We do not have an entree to surgery or to obstetrics or tonsillectomies that the general man does to increase our income. Where the general pediatrician falls down is where Public Health work takes it up. It is our own fault if they are doing what the general pediatrician should do, because there is no reason in this world why we shouldn't get into the field of pediatrics and take care of every bit that comes our way.

I feel that there is no member of this Section who does not take care of every baby that comes to his office, and that no one has ever been turned down for any pediatric advice or any pediatric examination or any medical care that could be given. However, I do feel that the pediatricians in North Carolina are really underpaid for the standards which they hold compared to other pediatric organizations.

Dr. L. W. Elias (Asheville): Of course, success in pediatrics, as in any other branch of medicine, depends upon the man—his personality and his ability. Yet we have had a large number of statistics presented here, and I would be interested if the doctor would tell us which practitioners were making the largest income—the ones who were charging small fees for office and house visits or the ones who charged more. Should we charge larger or smaller fees if we want to increase our income?

Dr. D. L. Smith (Saluda): This problem of income is a very serious one. I, very probably, have a little different situation in my office from most of the pediatricians practicing in the state, in that I try to keep all of my patients that I can out of the hospital.

Whenever you hospitalize the patient, the hospital gets the bulk of the income and you don't get anything at all. I do all my own transfusions right in my office, my matching and everything else, and I charge those patients a flat fee. Sometimes I do three or four transfusions a day, and I find it a very substantial source of income. My empyema cases I do not allow to go into the hands of a surgeon. I haven't in the past ten years hospitalized a patient with empyema. I do that work right in my office.

Dr. W. P. Richardson (Chapel Hill): I think there is one point we have left out here. Apparently, we are competing with the general practitioner in many of these things on his own ground. I wonder if it shouldn't be part of our function to do some of the things that the general practitioner is not qualified to do or hasn't time to do.

One is the question of habit formation of the pre-school child. I don't think we would find any competition in dealing with that very important period when the child may develop all sorts of physical defects and bad habits. I think that field should be developed as part of our work. It is not apparently being done by the general practitioner.

Also, the question of marriage counseling. Certainly we have some interest in successful and happy marriages. We know there are a great many which are not being handled right. Some of us should be preparing ourselves to do that sort of thing.

Then there is educational counseling. Adolescence is not a very happy time. It is because parents don't understand the problems of the adolescent child and nobody is bothering about it. He gets through it and afterwards settles down. Somebody spoke of abandoning the child at twelve or thirteen—when a fellow needs a friend. It seems to me the pediatrician could develop that as part of his

legitimate function. Certainly parents are going to ask somebody those questions. They ask the doctor first, and when he doesn't answer them, then they ask the Christian Scientist, or the consulting psychologist, or the woman next door, or somebody with a hunch, and they slip away from medicine into the hands of the cultists.

Chairman Kutscher (Asheville): There is one phase of this subject which I thought would elicit more discussion. That is contract prices. I wonder if any person here has had the experience I had with it. I had about twelve patients, and I think I concluded this experience about two or three years ago. I estimated that my average first year work for the average baby netted me \$66.00 a year. So for a year's care of a baby I charged \$72.00—\$6.00 a month. It was a very unhappy experience for me. A few people went through with it and they were quite pleased, but in the majority of cases it was not satisfactory for either party. Those who went through with it averaged about nine months, and they got a smallpox vaccine, diphtheria inoculation, and so forth, and then, somehow or other, they just stopped. I don't think they went to my competitors. They just simply faded out of the picture; some moved. But every person who went through as much as nine months got more office calls and so forth than would have been represented by the \$72.00. Some people, I think, had a slight inclination to abuse the privilege of coming into the office at any time they wished. The whole thing just sort of simmered out. It was, I thought, going to be a popular thing.

Some other person might wish to contribute his experience.

Dr. Reynolds, we would be glad to hear from you.

Dr. Carl V. Reynolds (Raleigh): I want to throw out a little challenge to the gentleman who said that the Health Department was over-stepping its bounds. In my mind, it is to the contrary. If the pediatricians did their entire duty from the birth of the child to the school age, there wouldn't be any use of any health department or health agencies. It is only where they leave off that it becomes absolutely necessary and essential for the health group to step in and protect the citizens.

To illustrate: North Carolina ranks third from the top in the death rate from diphtheria in the Union. Now, who is responsible for that? Is this a challenge to the pediatricians, or not?

Our State Board of Health, in an effort to lower that morbidity and mortality rate of diphtheria, got the Legislature to enact a law making it mandatory for children to be immunized against diphtheria. The pediatrician, and I classify the pediatrician as anybody taking care of a child, should be a health master rather than an individual. He should feel the responsibility of the entire group of children in a family as a health master.

I have sent out every health officer in the state since the law came into effect the first of January to serve notice on the parents of all the infants that were born within that law that had not been immunized to have them immunized. How that will work out, I don't know. But I hope that we may lower that high morbidity and mortality rate of diphtheria this year; and I don't know who can help us better than can you, save the public health personnel.

Dr. Aldert Root (Raleigh): I am chagrined over the record of North Carolina in diphtheria. We lose something like 200 cases of diphtheria every year in North Carolina, whereas in New York State, with a population about three times as great as North Carolina's, there are something like 26 deaths.

That is a disgrace to us doctors and to the North Carolina Board of Health. I think that the record of the State Board of Health is fine, except in diphtheria, and I don't think they have done enough about it. Perhaps we haven't. I think it is up to the State Board of Health and to us doctors to correct this humiliating situation.

Dr. W. P. Richardson (Chapel Hill): I wonder if it wouldn't be a good thing if this section took upon itself this year, through the appointment of a special committee, to discuss with a group that Dr. Reynolds might designate what we as a Section and as a profession could do to remove this disgrace, as we all admit it. Isn't it possible that such a committee acting with such a delegated group could bring the attention of the doctors, at least, to their duty; because, after all, the parents are going to do what their own doctors advise. It seems to me it wouldn't be a very difficult thing to work out some machinery by which something could be accomplished to clean up that situation.

I would like to move that you appoint a committee, possibly the outgoing president and incoming president, to agree upon such a committee.

... Motion was made and seconded to have a committee appointed by the outgoing and incoming chairmen to meet with a delegation appointed by Dr. Reynolds of the State Board of Health.

Dr. Arthur H. London, Jr. (Durham): A point which Dr. Root and Dr. Reynolds overlooked, and which I think is probably the cause of our difficulties is the question: What is our duty, and are we doing our duty? I don't think there is one pediatrician here doing a complete job of health care. We give a lot of shots, and then we become lax; if the parents don't come back we make no attempt to follow up. When diphtheria toxoid came out it was the general practice to give one dose of State toxoid. Not only that, but, principally through the Health Department, it has permeated throughout the State that the time to give diphtheria toxoid is at six months. I think that is entirely too early. If we give toxoid while the child has natural immunity, he doesn't have a good reaction to it and doesn't develop immunity.

I think the suggestion Dr. Richardson has made that we have somebody to work with the Board of Health is a good one.

Dr. Carl V. Reynolds (Raleigh): I want to say this: The State Board of Health, as has been said before, is a child of this Institution. It belongs to you. There is now existing a Pneumonia Consultation Committee with the State Board of Health, and we would be delighted to have a committee from this Section to work with us. The larger, the better.

... The motion that a committee be appointed by the incoming and outgoing chairmen of the Section to cooperate with the State Board of Health committee on the diphtheria problem as a whole was voted upon and carried.

Chairman Kutscher: Any further discussion? If not, I will ask Dr. Roberts to close.

Dr. B. W. Roberts (Durham): I am sorry I can't answer Dr. Elias' question. I hadn't thought of that particular phase of the questionnaire and have not worked it out.

I hope Dr. Reynolds didn't feel that I was expressing any animosity toward the health authorities at all. I think the general feeling as brought out by the discussion has already clarified the point.

THE AIMS OF THE AMERICAN ACADEMY OF PEDIATRICS

ARTHUR H. LONDON, JR., M. D.

DURHAM.

History: Pediatrics is one of the younger special branches of medicine. At its beginning, the time and energy of the founders was consumed by study and research on special problems of children. Efforts along this line have brought forth all the discoveries especially related to pediatric practice, and have given us the understanding of children's diseases which we have today. However, while we were engrossed in these problems, a great many lay organizations became interested in the general problems of childhood. The White House Conference brought forcibly to our attention the fact that, while great advances had been made in the knowledge of children's diseases, the pediatricians had overlooked the problem of the child as a whole. With this in mind the leading pediatricians of this country founded the American Academy of Pediatrics. Article III of the constitution defines the objects of the Academy as follows:

Section 1: "The object of the Academy shall be to foster and stimulate interest in pediatrics and correlate all aspects of the work for the welfare of children which properly come within the scope of pediatrics. The Academy shall endeavor to accomplish the following purposes:

"(a) To establish and maintain the highest possible standard for pediatric education in medical schools and hospitals, pediatric practice, and research;

"(b) To perpetuate the history and best traditions of pediatric practice and ethics;

"(c) To maintain the dignity and efficiency of pediatric practice in its relationship to public welfare;

"(d) To promote publications and encourage contributions to medical and scientific literature pertaining to pediatrics;

"none of which objects is for pecuniary profit."

With these high objectives in view, the founders appointed many committees to initiate the work. Space does not permit the enumeration of all the appointed committees. The following committees will give you an idea of the scope of the work undertaken:

1. Publication. 2 Child Health Relations. 3. Clinical Investigation and Scientific Research. 4. Contact Infections. 5. Immuni-

zations and Therapeutic Procedures for Acute Infectious Diseases. 6. Infantile Paralysis. 7. Medical Education. 8. Pediatric Nursing. 9. School Health and School Health Education. 10. Publicity.

These and eleven other committees have worked diligently on their respective problems. The Committee on Publications has completed its task; the results of its work are seen monthly in the publication of the official organ of the academy, *The Journal of Pediatrics*. The Committee on Immunization and Therapeutic Procedures for Acute Infectious Diseases has submitted its report in the form of a pamphlet, which may be used by all physicians as a guide for the proper procedures in this field. A copy of this has been sent to all Academy members and is available to all physicians at a nominal fee. The Committee on Contact Infections has had printed a small folder for distribution by physicians, which points out the dangers of contact infections and urges parents to have all adults (parents and servants who are in close contact with children) examined for possible contagion, especially tuberculosis and venereal diseases. Other pamphlets published are "For the Sake of the Children" and "The Health Supervision Your Child Should Have."

The Committee on Cooperation with non-medical groups and societies has worked in close cooperation with the National Parent-Teacher Association, especially in the summer round-up of pre-school children, and has guided the organization as to the proper type of physical examination.

Through the efforts of the Academy and with the cooperation of Mead, Johnson and Company, a talking moving picture has been made describing the proper procedure for physical examination of children and emphasizing the need for such an examination. This will be shown to lay groups throughout the country.

In order to make its work more effective, to prevent centralization of power, and to meet the individual requirement of each section, the Academy is divided into four regions—North, South, Mid-West, and West, with a chairman of each region. Each region has an annual meeting. The programs presented include individual papers and round-table discussions on various problems of childhood, led by national authorities on the

particular subject. These serve as short, intensive post-graduate courses for the members and other interested physicians, for all physicians are invited to the meetings. The regions are further subdivided by having a chairman for each state, who encourages the members to carry on the suggested work of their Academy.

The Academy is working in close cooperation with the U. S. Children's Bureau; in fact, the assistant chief of the Bureau, Dr. Martha Elliott, is a member of the Academy, as are many of her co-workers.

The specific activities of the Academy in this state are so far not very numerous. We have endeavored to cooperate with the national committees in their work. Three members of the Academy are on the Advisory Committee of the Maternity and Child Service Division of the State Board of Health. It is planning to continue to work in close cooperation with Dr. George M. Cooper, Chief of the Division of Maternity and Infant Welfare of the State Board of Health, and to aid in fostering programs of the Department of Child Health in this state. We hope in this way to lower the infant death rate in the state and to remove North Carolina from the lower ranks in the national rating. An effort will be made to encourage close cooperation between the pediatricians of the state and lay bodies dealing with child welfare. We hope to increase the use of pediatricians in the summer round-up of preschool children. We shall endeavor to disseminate information obtained by the national committees to all physicians interested in children; to search for methods to protect further the health and welfare of children; and to promote legislation to insure this protection. In this connection, the Legislative Committee of the North Carolina Branch of the Academy has prepared legislation to be presented to the next General Assembly which would make the allocation of public school teachers depend upon pupil enrollment rather than pupil attendance, hoping by this to decrease the morbidity among school children by removing undue emphasis upon attendance. This committee is also considering legislation to decrease lye poisoning in this state and to decrease milk-borne infections by requiring the use of pasteurized milk in public eating places.

MORTALITY WITH CAUSES OF DEATH IN A SERIES OF 917 CONSECUTIVE HYSTERECTOMIES

E. S. BOICE, M.D., F.A.C.S.

ROCKY MOUNT

Since the opening of the Park View Hospital in July, 1914, 917 patients have been operated upon for removal of the uterus. These operations were performed by one of three surgeons—Dr. B. C. Willis, Dr. N. P. Battle, and the writer. There were 23 deaths in the series of 917 cases, giving a total mortality of 2.5 per cent. In 656 instances the operation selected was supravaginal hysterectomy. Of these 20 died—a mortality of slightly over 3 per cent. For the remaining 261 cases a complete hysterectomy was done, with 3 deaths—a mortality of 1.15 per cent. Of these total hysterectomies 55 were done by the vaginal route, with one death—a mortality of 1.81 per cent—; while 206 were done by the abdominal route, with 2 deaths—a mortality of slightly less than 1 per cent. Of the 656 supravaginal operations 13 were Porro cesarean sections, 3 of which terminated fatally—a mortality of 23.7 per cent.

Because of the relationship between technique and mortality, and to obviate useless repetition in presenting the case records, certain technical details will be discussed briefly.

The vaginal operation has been reserved largely for those patients with a relatively normal uterine body and adnexa who were suffering from varying degrees of uterine prolapse and cystocele. In general the principle of the Mayo vaginal hysterectomy has been employed, correction of enterocele, rectocele, and relaxed perineum being added as seemed expedient. When there was much disease of the uterus or adnexa, we felt that the abdominal operation would probably give a better result. For the supravaginal operation we have used the usual technique, with closure and suspension of the coned out cervical stump and suture of peritoneum over raw surfaces. Since Richardson⁽¹⁾ described his operation in 1929 this has been the method followed when complete hyster-

Read before the Section on Surgery, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

1. Richardson, Edward H.: A Simplified Technique for Abdominal Panhysterectomy, Surg., Gynec., and Obst. 49: 248 (February) 1929.

ectomy was done. We have used drainage rarely, and almost never by the vaginal route.

In a number of supravaginal operations a preliminary cauterization of the cervix has been done (after carcinoma was ruled out), thus giving practically the same end result as a total removal, with less risk and with no deformation or shortening of the vaginal canal.

Whenever a total abdominal hysterectomy is planned a careful vaginal cleansing is carried out by the surgeon, using a speculum and a good light. An antiseptic pack is left in the vagina to be removed just before the vagina is opened. At times before panhysterectomy cauterization of the cervix or of a projecting tumor mass (after securing tissue for microscopic examination) has proven useful to destroy infected or sloughing tissue which otherwise would have been a source of contamination when the vagina was opened from above.

In recent years we have come to feel that the preliminary vaginal preparation should be carried out in all cases, whether or not a complete operation is planned at the outset. This safeguard will be invaluable should an unsuspected carcinoma or other condition be found which would necessitate a change from a projected subtotal operation to a total one. Also it is probably a wise procedure to cauterize the cervix (after biopsy) in most if not in all cases of proposed supravaginal hysterectomy to lessen the chance of future disease, either malignant or inflammatory, of this structure. While some surgeons do the cauterization after completion of the abdominal operation, we have felt safer in cauterizing as a preliminary procedure, thus destroying the mucosa up to the point of later amputation, without the risk of involving the sutured stump.

When cauterization is done preliminary to subtotal hysterectomy, there is a possibility that the resulting coagulation of tissue and blood might prevent drainage of infectious material from the uterus with resulting spill when the cervix is cut across. This was suspected as a possible source of peritonitis in one of our cases, and we now make sure that the canal is open. Also, we usually leave a temporary dry vaginal pack to absorb discharges.

Closure of the cervix by suture, preliminary to panhysterectomy, has been employed occasionally, but probably not frequently

enough. At least one of our fatalities may have resulted from failure to carry out this procedure.

The use of catheters in the ureters to prevent ureteral injury has been advocated. We have practiced this in a few instances, but not in recent years. This procedure would have been valuable in at least one case, a panhysterectomy for a large adherent fibroid, in which the ureter was severed four inches above the bladder. The ureter apparently healed completely following immediate repair over an indwelling catheter, but some vaginal leakage developed later. There was also one other instance of possible but unproven ureteral involvement in which a catheter was not used. These were the only known or suspected cases of ureteral injury in this series, and there were no cases of bladder or rectal injury.

In one or two of our peritonitis cases it seemed possible that infectious material had been squeezed down from the uterus by a tenaculum or by other pressure, with resulting contamination when the cervix was cut across. Since Richardson⁽¹⁾ called attention to the danger of disseminating cancer cells by this pressure in cases of malignancy, we have discarded the tenaculum in all cases in favor of clamps on the ligaments close to the uterus.

As might be expected, local sepsis and peritonitis accounted for almost half of our deaths. In some cases this may have been unavoidable, but more often some omission or slighting of the technique outlined above was probably responsible, particularly in the earlier years. In other instances disaster resulted from a lack of, or a failure to use to the best advantage, such agents as blood transfusion, intravenous glucose, intravenous acacia, etc., and the various modern laboratory aids for estimating the patient's condition. Undoubtedly, in some instances, a more prolonged period of preoperative preparation, particularly the more liberal use of blood transfusions and blood building agents, would have been helpful and in some cases probably life saving.

At times the principle of allowing complete subsidence of pelvic inflammatory disease has been violated with resulting unnecessary shock and blood loss, but it seems doubtful whether any of the peritonitis cases can be justly attributed to a stirring up of pelvic infection. More likely, at least in most instances, the contamination came from the

cervix or vagina. However, the lowered resistance incident to a recent acute inflammation, and the shock and blood loss of an operation made unnecessarily difficult by such inflammation, probably were active contributing causes in some instances. Increasing experience with these acute conditions has led to increasing respect for blood examinations, especially of the sedimentation rate, and for the correct interpretation of the findings of bimanual pelvic examination.

In classifying the causes of death it is found that there were 10 patients dying of peritonitis, in most instances probably the result either of some fault in technique or of inadequate pre-operative treatment, or both. Two of the Porro cases fall in this group, and both were obviously badly infected before operation was undertaken. For one of these operation may have been ill advised, but in the other case, a ruptured uterus, there was no alternative. Both of the fatal abdominal panhysterectomy cases died from peritonitis. One might have been saved had the cervix been closed by suture before operation. The other, a patient with extensive carcinoma of the cervix who was operated upon twenty-four years ago, would now be treated with radiation.

There were 4 patients whose deaths were attributed to shock and hemorrhage. One of these was an anemic tuberculous woman with premature separation of the placenta in the eighth month of pregnancy for whom a Porro operation was deemed necessary. Another was operated upon too soon after an acute pelvic inflammation. The other 2 deaths probably resulted from faulty control of bleeding points in the operative area.

One patient died while being operated upon for a secondary intestinal obstruction, death apparently being due to spinal anesthesia.

One patient died from congestive heart failure precipitated by an excessive use of parenteral salt and blood transfusions. These were employed to combat a septic condition which autopsy showed was due to an unsuspected blocked kidney, apparently secondary to ureteral involvement.

In the remaining 7 cases death resulted from a variety of secondary conditions not attributable to any fault in the technique of operation. In at least 4 of these 7 a fatality might have been avoided by more complete

diagnosis or by better postoperative management.

For the sake of brevity, in the following summary of the fatal cases only such facts are included as seem to have a direct bearing on the cause of death in each instance.

Case 1. A white woman, aged 61 years, was admitted on April 5, 1916, with a large sloughing carcinoma of the cervix. An abdominal panhysterectomy was done on April 8, 1916, drainage being established through the vagina. Death from sepsis occurred on the fifty-second postoperative day. We have long since discontinued operation for this type of case in favor of radiation.

Case 2. A Negro, aged 39 years, was admitted on July 18, 1926, with a mild flare-up of an old pelvic inflammatory disease. This subsided satisfactorily after one week. Blood counts were normal from the beginning; the maximum fever was under 100. There had been a previous amputation of the cervix. At operation on July 26, 1926, the pelvic organs were found buried by adhesions in the pelvis. The uterus was large and boggy. The tubes were sealed; there was no pus. The appendix was adherent. A supravaginal hysterectomy, bilateral salpingectomy, and appendectomy were performed. The patient died on the ninth postoperative day. Autopsy showed a generalized peritonitis. The cervix stump and appendix stump had both healed, with no adhesions to either one. It was noted that "most likely the contamination was from the cervix" when it was cut across. Because of the previous amputation of the cervix the operation was practically a panhysterectomy for which adequate vaginal preparation had not been made. There was also the possibility that infectious material had been squeezed down from the uterine cavity.

Case 3. A 37 year old Negro was admitted on August 15, 1935, with fibroids and quiescent pelvic inflammatory disease. She had a marked secondary anemia, with only 2,120,000 red blood cells, and 20 per cent hemoglobin. A supravaginal hysterectomy with bilateral salpingo-oophorectomy was performed on August 21, 1935. Blood transfusions were given before and after operation. Death on the fifth postoperative day was due to peritonitis (autopsy finding). The infection here probably came from the cervical canal, which was found to contain an exudate-covered fibroid projecting downward below the point of transection of the

cervix. A pack in the cervix and closure by suture followed by panhysterectomy might have prevented the peritonitis. Also a more prolonged period of pre-operative preparation, including especially enough blood transfusions to correct the anemia, would have been advisable.

Case 4. A Negro, aged 33, was admitted on October 18, 1938, with a diagnosis of uterine fibroids and quiescent pelvic inflammatory disease. The white cell count was 7,000, with 58 per cent polymorphonuclears. The red cell count was 4,920,000, and the hemoglobin was 84 per cent. The sedimentation time was 112 minutes. At operation, a panhysterectomy, the preoperative diagnosis was confirmed, no acute condition being found. However, death from peritonitis resulted on the seventh postoperative day. The focus from which the peritonitis developed was not definitely established. Vaginal contamination seemed unlikely, as there was no cervical ulceration and no other gross vaginal inflammation, and a careful vaginal preparation was done by the surgeon before operation. The possibility that infectious material was squeezed down from the uterine cavity must be considered. Here again closure of cervix by suture might have prevented the spread of infection.

Case 5. A 41 year old Negro was admitted on July 23, 1933, with bleeding uterine fibroids and secondary anemia. There were 9,400 white blood cells, with 78 per cent polymorphonuclears. The red cell count was 1,590,000, with 40 per cent hemoglobin. The sedimentation time was 86 minutes. Following transfusion there were 3,480,000 red blood cells, with 50 per cent hemoglobin. On July 25, 1933, supravaginal hysterectomy, bilateral salpingo-oophorectomy and appendectomy were performed. The patient died on third postoperative day, apparently from peritonitis. No autopsy was done. This patient had been flowing steadily for two weeks, and the cervical canal, which was relaxed and open, was probably the source of her peritoneal infection. Packing and suture of the cervix followed by panhysterectomy might have prevented the peritonitis.

Case 6. A white woman, aged 44, was admitted on June 5, 1921, with a large fibrotic uterus and a left ovarian cyst. On June 18, 1921, cauterization of a cystic inflammatory cervix was followed by supravaginal hysterectomy, bilateral salpingo-oophorectomy, and

appendectomy. A small mass of partly organized infected tissue was found in the uterus. There was an apparent postoperative obstruction, which was proven at operation on June 21 to be a peritonitis. The patient died on June 23, the fifth postoperative day. Smears from the peritoneal exudate showed intracellular diplococcic. Since the vagina was cleansed and the cervix cauterized preliminary to the laparotomy, it was felt that probably the contamination came from a spill of infectious material from the uterus when the cervix was cut across. Blockage of the cervical canal as a result of the cauterization may have been a contributing factor.

Case 7. A 36 year old Negro was admitted on March 25, 1929, with a diagnosis of bleeding fibroid and secondary anemia (2,810,000 red blood cells, and hemoglobin 25 per cent). No periods had been missed. There had been constant bleeding for the previous three months. After a blood transfusion, a supravaginal hysterectomy was done on March 30, 1929. The relaxed cervix was found to be filled with clotted blood, and the uterus contained a mass of degenerated, infected, adherent placenta. The patient died of peritonitis on the fourth postoperative day, evidently due to infection from the septic uterine contents when the cervix was cut across. Closure of the cervix by suture followed by panhysterectomy might have saved this patient. Of course, had a correct pre-operative diagnosis been made, hysterectomy would not have been undertaken.

Case 8. A Negro, aged 52, was admitted on May 4, 1938, with a provisional diagnosis of uterine fibroids and quiescent pelvic inflammatory disease with secondarily involved appendix. The white cell count was 9,500, with 81 per cent polymorphonuclears. There were 3,670,000 red blood cells, and the hemoglobin was 67 per cent. The sedimentation time was 26 minutes. On May 12 the sedimentation time was 108 minutes, and the leukocyte count was 12,200. The temperature previous to operation was never higher than 99.4 F. At operation on May 13, the uterus, pedunculated fibroids, tubes and ovaries were found to be firmly bound in the pelvis. When the structures were freed preparatory to removal, the appendix was found to be involved in the mass with a small amount of pus around the tip. Discontinuing the operation at this point did not seem to

offer any advantage over removal of the already liberated structures; so supravaginal hysterectomy, bilateral salpingo-oophorectomy, and appendectomy were performed. The pelvis was drained. Death from peritonitis followed on the eighth postoperative day. Had the small appendix abscess been suspected and attacked first, and no attempt made to remove the pelvic organs, this fatality might have been avoided. Certainly this patient would not have been operated upon at all, at this stage, had the surgeon realized the extent and acuteness of the appendiceal involvement.

Case 9. A 37 year old Negro was admitted on September 26, 1934, with uterine fibroids complicated by an old pelvic inflammatory condition. On October 2 a supravaginal hysterectomy with bilateral salpingo-oophorectomy and appendectomy was done under spinal anesthesia. Bleeding on the right side was controlled with difficulty, but apparently completely. The patient's condition was good for the first seven hours after operation, following which she rapidly went into a state of collapse and died three hours later from hemorrhage (autopsy finding). Presumably a return of normal blood pressure after operation started afresh the hemorrhage which had seemed to be under control during the period of low blood pressure incident to the spinal anesthesia.

Case 10. A white woman, aged 43, was admitted on November 8, 1928, with a large fibrotic retroverted uterus and a left ovarian cyst. On November 10 supravaginal hysterectomy, left salpingo-oophorectomy, and appendectomy were performed. After what appeared to be a normal postoperative course for two days, the patient suddenly went into a shock-like condition and died on the third postoperative day. Autopsy was not permitted, and a definite diagnosis was impossible from the symptoms. There was no unusual vomiting, and excellent results were obtained from the enemas. The temperature reached 101 F. only once. The pulse was 110 or below until shortly before death. There was nothing to indicate peritonitis or obstruction. Late secondary hemorrhage was considered as a possibility.

Case 11. A Negro, aged 41 years, was admitted on October 15, 1923, with a diagnosis of fibroids and subacute pelvic inflammatory disease. Following three weeks of preparatory treatment operation was undertaken. The pelvis was found to be filled with fibroids

and bilateral tubo-ovarian abscesses. After a very bloody dissection the uterus and both tubo-ovarian masses (unruptured) were removed. The patient died thirty-three hours later of shock and hemorrhage. Obviously the inflammatory condition was too acute and the operation should have been deferred. As it was, a blood transfusion might have saved her had a donor been available. Experiences such as this have impressed upon us the importance of having suitable donors at hand before undertaking extensive operative procedures.

Case 12. A 33 year old white woman was admitted on September 8, 1929, with a bleeding vagina and cervix badly traumatized by an unsuccessful effort to deliver an impacted shoulder presentation at term. A Porro operation was done. Death occurred on the eighteenth postoperative day from sepsis and pyemia. Better obstetrics might have saved this patient, but unfortunately no obstetrician was available.

Case 13. A Negro, aged 24, was admitted on July 8, 1939, pregnant at term. She had been in active labor for the previous three days, with no progress. The membranes had ruptured a few hours after the pains began. Cesarean section was advised by the consulting obstetrician. The uterus was found to be ruptured, with the placenta and dead baby (hydrocephalic) lying free in the abdominal cavity. Beginning peritonitis with the accompanying foul odor was noted. A supravaginal hysterectomy was done, with drainage, followed by the usual treatment for peritonitis, including blood transfusion and sulfanilamide by hypodermoclysis. Death from peritonitis occurred on the ninth postoperative day.

Case 14. A Negro, aged 25 years, was admitted on March 22, 1937. She had been pregnant eight months. There was premature separation of the placenta with considerable bleeding. The patient had active pulmonary tuberculosis. The leukocyte count was 20,500, with 85 per cent polymorphonuclears. The red cell count was 2,360,000, with the hemoglobin 35 per cent. The blood pressure was 75 systolic. After a blood transfusion a cesarean section was done. The placenta was found to be completely detached, and the uterine wall was infiltrated with blood. The uterus failed to contract and continued to bleed, so it was thought best to remove it. The patient died in shock twenty-seven hours after operation.

Case 15. A 46 year old white woman was admitted on June 1, 1938, with fibrotic uterus, grade III cystocele, and lacerated cervix. There were 9,000 leukocytes, with 82 per cent polymorphonuclears. The red cell count was 3,260,000, and the hemoglobin 48 per cent. The urine was negative, and the heart apparently normal. The blood pressure was 120 systolic, 80 diastolic. Following a week of preparation, including blood transfusion, a Mayo vaginal hysterectomy was done. After operation a transfusion of 500 cc. of citrated blood was given. The postoperative temperature curve was septic in type, going as high as 104 F. Large amounts of parenteral fluids (normal saline and glucose) were given. On the sixth postoperative day a transfusion of 500 cc. of citrated blood was given. Following this transfusion failure of the right heart gradually developed. Pitting edema became generalized, the liver became palpable, the blood pressure fell rapidly, anuria ensued, and death resulted on the eighth postoperative day. It was felt that death was due to failure of the right heart "precipitated by the added load of blood transfusion into a circulatory system which had lost its regulatory mechanism because of an edematous state of the tissues secondary to an excess retention of parenterally administered salt solution."

Autopsy showed the operative area to be healed with no adhesion, but a loop of terminal ileum was adherent to an organized blood clot in the cul-de-sac, producing slight partial obstruction. Purulent urine was found in the right kidney pelvis. This finding, added to the fact that the catheterized urine had shown no pus on three occasions, and that there were no other findings before or after death to account for the septic fever, led to the conclusion that the fever was due to the kidney condition. Obviously an involvement of the ureter at the site of the operation must be suspected, though this was not proven at autopsy. Certainly, had the patient's temperature run an ordinary course, the unfortunate train of circumstances culminating in the failure of the right heart would not have ensued. Also, had the kidney condition been suspected, a nephrectomy done before the heart condition developed might have saved the patient.

Case 16. A white woman, aged 49, was admitted on March 30, 1931, with fibroids accompanied by excessive bleeding for the previous six months. Supravaginal hyster-

ectomy was done on March 31, 1931. Intestinal obstruction developed, owing to an adherent loop of ileum. Operation for this was done under spinal anesthesia on April 8. Death came suddenly at the close of operation, apparently from circulatory failure. While this patient's condition was not good, her death at operation was totally unexpected, and the degree of obstruction and accompanying toxemia did not seem to be sufficient to explain the sudden collapse. We have since discontinued the use of spinal anesthesia in similar cases of poor risk.

Case 17. A white woman, aged 46 years, was admitted on June 10, 1934, with a fibroid as large as a full term pregnancy. Supravaginal hysterectomy was done on June 13, 1934. Her convalescence was normal until the tenth postoperative day, when death came suddenly, presumably from acute dilatation of the heart.

Case 18. A Negro, aged 53, was admitted on January 22, 1935, with a multiple fibroid tumor filling the abdomen. She had lost 40 pounds in the previous four months. The leukocyte count was 7,000, with 73 per cent polymorphonuclears. The red cell count was 3,960,000, and the hemoglobin 50 per cent. The urine was negative except for a faint trace of albumin. The blood urea was 20 mg. Following a blood transfusion there were 4,600,000 red cells, and the hemoglobin was 60 per cent. On January 28, supravaginal hysterectomy was done, and a 12½ pound mass of fibroids was removed, one portion of which was found to be sarcomatous. The convalescence was normal for a few days, then the patient developed a definite psychosis; she refused to eat, became toxic, and died on the eighteenth postoperative day. Autopsy showed no peritonitis or obstruction or other gross lesion sufficient to explain death.

Case 19. A 36 year old Negro was admitted on November 26, 1933, with uterine fibroids and old pelvic inflammatory disease. The urine showed a heavy reduction of Fehling's solution, and the fasting blood sugar varied between 125 and 154 mg. Temperature and repeated blood examinations, including sedimentation time, were within normal limits. On December 11, 1933, supravaginal hysterectomy, bilateral salpingectomy, and appendectomy were performed. Death occurred on the fourth postoperative day, apparently precipitated by insulin shock. Autopsy was not permitted.

Case 20. A Negro, aged 42, was admitted on August 17, 1930, with a diagnosis of uterine fibroids and old pelvic inflammatory disease. The leukocyte count was 7,400, with 48 per cent polymorphonuclears. The red cell count was 4,090,000, the hemoglobin 70 per cent. Catheterized urine showed a specific gravity of 1.013, a faint trace of albumin, and numerous pus cells. The blood urea was 47 mg. per 100 cc. The sedimentation time was 36 minutes. On August 20 supravaginal hysterectomy, bilateral salpingo-oophorectomy, and appendectomy were done. Death occurred on the fourth postoperative day from kidney failure.

Autopsy showed no peritonitis or other intraperitoneal involvement to explain death. The right kidney was atrophic, scarred and shriveled. The left kidney showed the pelvis and calices dilated and cortex thinned, owing to partial blockage of the uretero-pelvic junction by a large branched stone.

A correct evaluation of the condition of this patient's kidneys would have shown that operation was contra-indicated, as the pelvic tumor was not causing enough trouble to justify the risk.

Case 21. A 40 year old Negro was admitted on July 16, 1916, with a diagnosis of bleeding fibroids and hemorrhoids. On July 17, supravaginal hysterectomy, appendectomy, and hemorrhoidectomy were performed. At that time it was the practice to keep the bowels from moving for several days after removing hemorrhoids, and this patient was given paregoric every four hours. Progress for the first five days seemed satisfactory, the patient taking a liquid diet nicely. She then began to vomit and became distended. An ileus developed and she died on the night of the sixth postoperative day.

Autopsy showed no peritonitis and no adhesion or other mechanical obstruction. The pelvis was filled with fluid-laden coils of ileum which peristalsis had not been strong enough to empty. Below this point the bowel was collapsed. It was felt that had the patient been turned on her abdomen to permit escape of the fluid trapped in the pelvis, she might have survived. We have since come to feel that it is a bad practice to remove hemorrhoids in conjunction with an abdominal operation, and that the persistent use of a constipating agent following hemorrhoidectomy is unwise, especially in a case of this sort.

Case 22. A Negro, aged 40 years, was admitted on March 23, 1923, with a mass of fibroids extending to the umbilicus. The tumor had been noticed for "more than a year." There had been "indigestion", gas, sour stomach, and at times vomiting for six or seven months, and the patient had reduced her food intake to avoid these symptoms until she had lost much weight and had become very weak. Menstruation had ceased seven months before. At operation on March 27 the pelvis and lower abdomen were found filled with fibroids rather firmly adherent, as the result of an old pelvic inflammation. The pylorus was involved by a tumor mass 4 or 5 cm. in size, free and resectable with no demonstrable distant metastasis. It was thought best to remove the pelvic tumor first, with the idea of resecting the pyloric growth later. The patient vomited rather persistently and finally died on the twenty-seventh postoperative day. Autopsy showed no peritonitis and no intestinal obstruction. The pyloric growth was definitely proven to be carcinoma.

Had this patient's history and symptoms been interpreted properly the stomach condition should have been diagnosed before operation. Certainly fibroids, even when as large as in this instance, rarely give rise to as much gastric distress as this patient complained of. While the risk was poor either way, probably the chances for survival would have been better had the stomach condition been attacked first.

Case 23. A Negro, aged 34, was admitted on June 14, 1927. On June 16 supravaginal hysterectomy and bilateral salpingo-oophorectomy were done for multiple fibroids and extensive old pelvic inflammatory disease with dense adhesions. She had an uneventful convalescence until the eleventh postoperative day, when she was stricken suddenly with chest pain and respiratory difficulty, and died within a few minutes, apparently from pulmonary embolus. Autopsy was not permitted.

Summary

The 23 deaths occurring in a series of 917 hysterectomies have been analyzed with the hope of avoiding or at least decreasing similar fatalities in the future. This analysis shows that, with few exceptions, death was probably due to one or more of several things which possibly might have been avoided. Heading the list is infection in some form,

probably occurring most often as a result of some lapse in technique. Other than infection, death resulted most frequently from inadequacies in pre-operative and postoperative treatment, or from deficiencies in diagnosis of associated conditions. True unavoidable deaths were the exception.

Abstract of Discussion

Dr. G. C. Cooke (Winston-Salem): I have enjoyed Dr. Boice's paper immensely. I think that that is an ideal way to study medicine—to have autopsies reported occasionally in a group like this. There are two points I would like to mention.

One is about puerperal sepsis. I have seen three deaths from peritonitis of an unexplained origin following hysterectomy, in which there was a history of puerperal sepsis as many as four years previously. These three cases impressed me so much that I inquired and found that that has been frequently seen.

Another point is the death from spinal anesthesia during operation for intestinal obstruction. I began using spinal anesthesia about sixteen years ago, and in nearly 4000 cases, I have had 2 deaths. They have both occurred in intestinal obstruction. Of course, both these patients were in a critical condition to start with, but in each case I had preceded the spinal with morphine. Since then I have not used morphine with spinal anesthesia in cases of intestinal obstruction, and the subsequent cases have survived.

Dr. Donnell B. Cobb (Goldsboro): There is very little discussion that one can give on Dr. Boice's paper, except to agree with the sound ideas he has expressed.

I would like to stress one excellent point which he brought out, which probably a great many of us do not observe. That is, to prepare the vagina thoroughly in all cases where a complete or a supravaginal hysterectomy is planned.

According to statistics the supravaginal hysterectomy carries with it a greater risk of pelvic cellulitis in postoperative infection than does the complete hysterectomy. I think it entirely possible that preparing the vagina carefully might reduce that risk.

I think that Dr. Boice and his associates should be commended for being able to do almost a thousand hysterectomies with a mortality of only 2½ per cent.

One point which he brought out may be a little misleading. He reports a 3 per cent mortality in his supravaginal cases and about 1 per cent mortality in his complete hysterectomies. I imagine that Dr. Boice is probably like the rest of us: We do the complete hysterectomies in the patients who are the best risks, and the supravaginal operations where we have a poor risk patient, or where we are running into difficulty. For that reason, the mortality rate is greater there. Of course, the complete operation, as we know, has the advantage of completely removing the cervix and eliminating that as a possible focus of further infection.

It has been my feeling that the end results are just as good, the mortality lower, and the operations much easier, when a thorough conization of the cervix is done—thus removing the infected material—and the supravaginal type of operation is then performed.

Chairman Rose: Is there any further discussion of Dr. Boice's paper? If not, we will ask Dr. Boice to close the discussion.

Dr. Boice: Mr. Chairman, I appreciate the discussion of these gentlemen.

I don't recall definitely whether there was anything in the previous history of any of these patients regarding puerperal sepsis. What we were trying to get at was the most likely cause of death in each individual case—that is, the cause which was present at the time of operation—and the things which I have outlined seemed to be what caused death in these instances.

On the question of spinal anesthesia: Unfortunately, we have had more deaths than Dr. Cooke has, and they have all been in the very poor risk patients. We have discarded spinal anesthesia for these bad risks.

On the question of the compared mortality between the supravaginal and the complete operation: Of course, it is, as Dr. Cobb says, largely a matter of selection of cases, and of careful preparation. In a number of our cases we have made the mistake of not carrying out a careful pre-operative vaginal preparation.

I recall two recent patients who survived total hysterectomy who would very probably have died had a supravaginal operation been attempted because there was so much infectious material in the cervix. In one case there was a fibroid protruding through the cervix presenting a sloughing, infected area 4 or 5 cm. in diameter. To have attempted a supravaginal hysterectomy certainly would have been disastrous. However, following destruction of the infected slough with the cautery plus a thorough vaginal clean-up a panhysterectomy was carried out successfully.

We have had a number of somewhat similar cases. Whereas, in some of the supravaginal cases that were lost we can see where we might have been successful with a panhysterectomy preceded by proper preparation or suture of the cervix.

PNEUMOCONIOSIS

H. F. EASOM, M. D.

SANATORIUM

Pneumoconiosis is a term used to describe all dust diseases of the lungs. Because of numerous law suits and the enactment of occupational disease laws in many states it has become a subject of ever increasing interest, not only to the medical profession, but also to industry, labor, insurance companies and the legal profession.

It is not a recently discovered disease. We find that as early as the sixteenth century Agricola, a mining engineer, described dust conditions in dry mines and warned that dust "penetrates into the windpipe and eats away the lungs and implants consumption in the body." Later, in 1700, Ramazzini published a comprehensive volume dealing with occupational disease in practically all of the trades and professions known in his day. Of stone workers he says: "They oft times

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suck in by inspiration the sharp and rough cornered particles or splinters that fly off, so that they are usually troubled with a cough and some of them are asthmatic and consumptive." Modern industrial tools and processes which create very high concentrations of dust, and the economic depression which indirectly resulted in numerous law suits for silicosis have caused us in recent years to focus attention on the subject.

There are as many kinds of pneumoconiosis as there are kinds of dust, and many of them have been named to indicate the type of dust responsible. Only two of these, silicosis and asbestosis, caused by inhalation of free silica and asbestos dusts respectively, are known to be clinically important and capable of causing disability. Other dusts, such as granite and pyrophyllite, have been suspected, but in each instance it has been shown that the free silica present caused the silicosis. Gardner suggests that the lung changes caused by dusts which do not contain free silica be classified in a group known as "benign non-specific pneumoconiosis." Examples of this group are siderosis from iron dust, anthracosis from coal dust, and many others. Prolonged inhalation of these so-called inert dusts may result in exaggeration of the linear markings as visualized on an x-ray film, probably as a result of simple accumulation of dust along the lymphatics rather than of fibrosis. At any rate it does not develop to a stage of clinical importance.

It appears therefore that only silicosis and asbestosis merit serious consideration, and of these silicosis is the more important because of the much larger number of workers exposed to silica dust.

Silicosis may be defined as abnormal fibrotic changes in the lungs caused by the inhalation of free silica. When we realize that silica, or quartz, is the most constant constituent of the rocks and minerals that go to make up the earth's crust, it is obvious that those occupations associated with mining of various types, mineral grinding, rock quarrying, stone cutting, tunnel driving, and the manufacture of brick and tile often expose workers to silica dust in harmful amounts. Exposures also occur in many industrial processes such as the manufacture of abrasive soap powder and in the foundry industry. Altogether, it has been estimated that approximately 500,000 persons in the United States are exposed to silicious dust.

Ordinarily silicosis requires many years to

develop. Even with very high dust concentrations serious disease seldom occurs in less than two years, and under conditions usually encountered it requires fifteen to thirty years.

Several known factors determine the harmfulness of a dust:

1. Its chemical composition.
2. Its concentration in the atmosphere.
3. The size of the particles.
4. The length of exposure.

Other factors, such as pulmonary infection and individual susceptibility may also play a part.

The importance of chemical composition has already been indicated. Free silica must be present, and, other factors being equal, the silicosis-producing power of a dust increases in proportion to the percentage of free silica it contains.

The concentration of dust particles in the atmosphere about the worker is important. Fortunately, nature has provided us with rather efficient barriers to the entrance of dust into the lungs. The hairs of the nose and the moist mucous membranes of the respiratory tract act as traps, and ciliary action tends to expel particles, so that a normal person may safely breathe low concentrations of harmful dusts for years without ill effects. However, these protective mechanisms are unable to cope with high concentrations for long.

Dust particles, in order to be respirable, must be very small. In fact, only those less than 10 microns in size are considered harmful, and the majority of those reaching the lungs are less than 3 microns. Particles of this size may be created in high concentrations in such operations as sand blasting, rock drilling and stone cutting with pneumatic tools, and fine grinding of minerals; and they remain suspended in the atmosphere for long periods.

The essential feature of silicosis is the production of fibrous tissue. Inhaled dust particles are picked up by phagocytes in the alveoli and taken into the lymphatics which drain toward the hilum. Some are trapped in the small lymphoid deposits along the vessels and bronchi and others reach the tracheobronchial glands. Silica seems to have a poisonous effect on the phagocytes, causing them to die; wherever these dead phagocytes accumulate along the lymphatics the silica stimulates the formation of fibrous tissue in

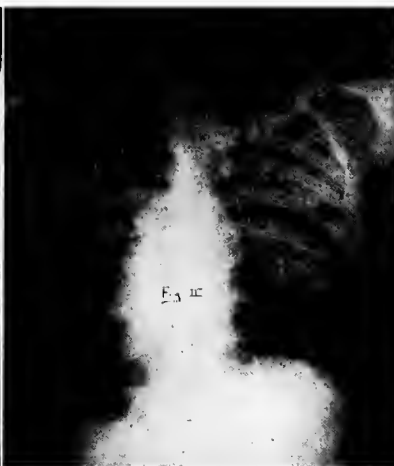


Fig. 1. Simple silicosis (second stage). Notice the symmetrical, discrete nodulation. This patient was a feldspar miner for fifteen years. He had no symptoms.

Fig. 2. Advanced silicosis with spontaneous pneumothorax. This film is that of a colored male, aged 24 years. He worked as a sand blaster in a granite cutting shed approximately six years without any dust control measures. He was exposed to high concentrations of sand and granite dust. The film shows bilateral nodulation, conglomerate shadows, emphysema and a localized area of spontaneous pneumothorax. He died a few weeks after this film was made. Autopsy showed advanced silicosis. No tuberculosis was found.

Fig. 3. Silicosis and tuberculosis. This film is that of a molder in an iron foundry for fifteen years. His symptoms were productive cough and loss of weight and strength. The sputum was positive for tubercle bacilli. He did not respond to sanatorium treatment. Autopsy revealed silicosis and tuberculosis.

the form of concentric whorls known as silicotic nodules. Eventually, if the dust exposure is heavy, there is partial blockage of the lymphatics. Some of the wandering cells enter the parenchyma and cause the formation of nodules there also. Then we have the typical picture of simple silicosis—namely, numerous discrete nodules, symmetrically distributed through both lungs. Fortunately, most cases come under this classification.

There is, however, a second type known as massive conglomerate silicosis. Here we may have massive conglomerate shadows occurring bilaterally and usually on a background of nodulation. As a rule these cases show marked emphysema. The etiology here is not clear, but Gardner states that in about 60 per cent of autopsies in this group he has been able to find evidence of tuberculosis. He feels that, in these cases at least, the massive type of lesion is probably accounted for by the combination of silicosis and tuberculosis. For the remaining 40 per cent he has no satisfactory explanation. In my own experience I have gained the impression that massive lesions occur most frequently among those workers exposed to high concentra-

tions of dust having a high free silica content.

A third group of silicotics comprises those with pulmonary infection. Silicosis seems to favor the development of tuberculosis, which is by far the most frequent and serious complicating infection. Its appearance may range from small coalescing shadows on a background of simple nodulation to massive shadows involving the greater part of both lungs. Usually the development of such lesions is very gradual.

The discrete nodulation of simple silicosis does not cause symptoms, and therefore is usually discovered in routine industrial surveys. The massive type with the emphysema that usually accompanies it may cause disabling dyspnea and cough, but it is not unusual to see workers with such lesions carrying on their usual occupations with only mild symptoms. The third type, silicosis with infection, comprises only a small percentage of the total number of cases of silicosis; but it is the most important, because most of the disability and deaths occur in this group. The course of tuberculosis, the most frequent infection complicating silicosis, is usually chronic, and patients do not exhibit the toxic symptoms that ordinarily accompany uncomplicated tuberculosis. Quite often the only complaints are dyspnea and cough, resulting in a decreased capacity for work. Weakness, loss of weight and fever are frequently late symptoms.

The diagnosis of silicosis requires first of all a history of adequate exposure to silica dust, and secondly, a characteristic x-ray pattern. Both must be present. Physical examination is of little value.

Besides silicosis the other important type of pneumoconiosis is asbestosis, caused by prolonged inhalation of asbestos dust. It is of especial interest in North Carolina because we have approximately 500 persons in the asbestos industry, many of whom have been found to be affected. Asbestos is a fibrous mineral, magnesium silicate, which can be spun and woven into cloth, tape, brake bands and other woven products, or ground and used in paints and paper. It does not contain free silica. Inhalation of this dust over a period of years produces a different type of pathology from that of silicosis. According to Gardner the dust particles are deposited mainly on the walls of the terminal bronchioles, where they stimulate formation of a fibrous cuff. As this contracts, it narrows the lumen and finally prevents air from penetrating into portions of the lung supplied by the bronchiole in question. This eventually results in both atelectasis and emphysema. The x-ray appearance of asbestosis is rather characteristic. Over the middle and lower portions of the lung there is a ground glass appearance, tending finally to obliterate the linear markings. In advanced stages the heart outline often becomes shaggy in appearance and the excursion of the diaphragm limited. Nodulation and conglomerate areas which frequently occur in silicosis are not seen in asbestosis. Also there is no evidence to indicate that asbestosis influences the development or course of tuberculosis in any way. The most distressing symptoms are dyspnea and a rather non-productive cough, and these are usually much more marked than would be expected from the x-ray findings. The average length of exposure required for the development of asbestosis is less than for silicosis. The diagnosis requires a history of adequate exposure and a characteristic x-ray pattern.

The solution of the silicosis and asbestosis problem lies in prevention, because neither disease can be cured. It is chiefly an engineering problem and requires the control of harmful dust by various methods such as exhaust, ventilation, moisture, isolation of dusty operations, good housekeeping, substitution of materials and the use of approved

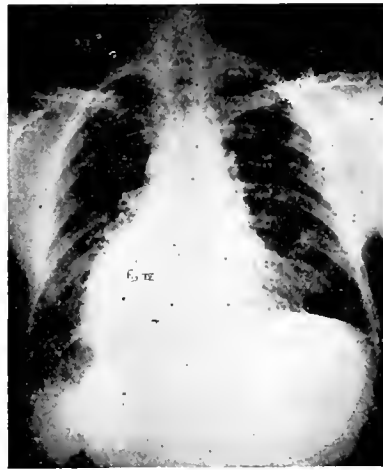


Fig. 4. Advanced asbestosis. This patient worked in the preparation department of an asbestos plant fourteen years. He quit work some time prior to this examination on account of dyspnea and severe, slightly productive cough. The film shows marked fibrosis throughout both lungs and typical shaggy appearance of the heart outline. The case was classified as far advanced asbestosis. The patient died a few months after this film was made.

respirators. Medical examinations both before and during employment are desirable to weed out those workers who have tuberculosis or other serious lung conditions which may increase their susceptibility to the effects of dust, and all those who have developed silicosis or asbestosis to a degree which makes it dangerous for them to continue in a dusty atmosphere. In North Carolina such a program has been under way since 1935, when the General Assembly passed the Occupational Disease Act which made silicosis, asbestosis and 23 other occupational diseases and conditions compensable and required both pre-employment and routine medical and x-ray examinations of workers exposed to silicosis dust. Some 10,000 such examinations and re-examinations have been made to date, including the workers in practically all dusty operations in the state employing more than five people. The results of these examinations have made it possible to spot the dangerous jobs, so that now industrial hygiene engineers and industry can work out suitable control measures. It is reasonable to assume that the continuation of such a program will eventually make asbestosis and silicosis very rare diseases.

Abstract of Discussion

Dr. S. B. McPheeters (Goldsboro): Dust has been defined as minute particles of solid matter suspended in air, or liquids, or lying upon the surface of objects. Drinker limits dust to particles, 150 to 1 micron; smaller particles he classifies as fumes and smoke.

The tissue responses to dust are irritation, inflammation, infection, allergic reaction, toxic re-

action and fibrosis. The two most important fibroses have been discussed by Dr. Easom.

When you realize that ordinary street dust may contain as many as a million particles of dust per cubic foot, and that in quiet breathing you breathe about 3000 gallons of air a day, it is obvious that we must have some mechanisms to protect us from dust. Dr. Easom has referred to those mechanisms which prevent its ingress. Those mechanisms are said to take care of about 50 per cent of ordinary dust. Other dust must be disposed of by the mechanisms of disposal, and in this process the phagocytes play the leading roles.

These phagocytes pick up particles of 10 microns or less, enter the lymphatics, which open on the respiratory bronchia, and come to rest first in the tracheobronchial lymph nodes and then subsequently in the intrapulmonary lymph nodes and accumulations of lymphoid tissue, proceeding from the hilus to the periphery.

All dust except silica, according to Gardner, produces an increase of connective tissue. Silica, as Dr. Easom has mentioned, produces a particular tissue response. This increase—this perilymphatic increase—merely increases the framework of the lungs. This is the preliminary response to all dust; there is no clinical result from this, however it may be caused.

The weight of public opinion, as far as I am conversant with it—and as summarized by Gardner—is in accord with the statement made by Dr. Easom to the effect that asbestosis is neither significantly progressive after cessation of exposure, nor does it greatly increase the susceptibility to tuberculosis. Silicosis is progressive, but persons rarely die from silicosis.

In the South African statistics, 75 per cent of silicotics die from tuberculosis. It is said that silica does not increase the susceptibility to pneumococcus pneumonia. Pneumonias which cause death in silicotics are bronchial pneumonias.

I am sure that we are all proud of the work that North Carolina is doing in the control of these two diseases, and we welcome such contributions as Dr. Easom's to the general knowledge of those two important diseases.

Dr. P. P. McCain (Sanatorium): After Dr. Easom's paper and Dr. McPheeters' discussion, I don't think the subject needs any further elucidation; however, I would like to give testimony to the splendid work Dr. Easom has done in establishing and organizing the Industrial Hygiene Department of the State Board of Health. He has been largely responsible for this himself, and he has put the North Carolina Department of Industrial Hygiene on such a splendid basis that it has become somewhat of a model. Quite a number of the other state heads have been coming to North Carolina and they are modeling their organizations and their work after the North Carolina Industrial Hygiene Department.

In a survey of conditions in 17 cement plants located in various parts of the United States, it was found that the incidence of tuberculosis and other chronic infections of the lungs was less among the employees than in the general population. The manifestations of tuberculosis occurred in typical form and at the same age periods as in persons not exposed to dust by occupation. It was concluded that prolonged inhalation of cement has no unfavorable influence upon susceptibility to tuberculosis infection or upon its subsequent evolution. Leroy U. Gardner, M.D., *Jour. of Industrial Hyg. and Toxicology*, Sept. 1939.

PROLONGED OCCLUSION IN LATENT PHORIAS

F. O. FAY, M. D.

NORFOLK, VA.

Heterophoria is a term for the various forms of deviation tendencies which may occur in ocular motility. It is essentially different from heterotropia in that these tendencies are overcome during the process of binocular vision, and manifest squint does not appear. A phoria becomes a tropia when the individual is no longer able to hold the visual axes in alignment. The effort expended in holding the deviation in control may give rise to symptoms of discomfort and blurred vision. A latent phoria is one which does not become apparent with the usual methods of examination.

In 1897 Dr. F. W. Marlow⁽¹⁾, noting the occurrence of a diplopia which had not previously existed, after the occlusion of a patient's eye for a week, thought that this might be an additional way of bringing out latent deviations. His theory was that the disturbance of fusion in occluding one eye might be sufficient to relax the spasm induced by the effort to retain binocular fixation. He proceeded with this as a test, and found in many instances⁽²⁾ that he could diagnose a condition otherwise undiscoverable, treatment of which would give relief from the symptoms. Later⁽³⁾ he advocated the occlusion of the second eye if occlusion of the first did not show conclusive findings, and reported over 2,000 cases. He also felt that prolonged occlusion showed beyond any doubt that, owing to the variance in duction findings, there was no constant relation between the preocclusion adduction and the amount of exophoria actually present.

There has been considerable adverse criticism of his test, some of it undoubtedly arising from its inaccurate application. Abrahams⁽⁴⁾ cited the natural tendency for the covered eye to turn up (Bell's phenomenon) and suggested that a vertical phoria would develop in most normal persons. Wendell

Read before the Section on Ophthalmology and Otolaryngology, Medical Society of the State of North Carolina, Pinehurst, May 14, 1940.

1. Marlow, F. W., in *Ophth. Rec.* 6:116 (March) 1897.
2. Marlow, F. W., in *N. Y. State J. Med.* 15:429 (November) 1915; *N. Y. M. J.* 108:936 (November) 1918.
3. Marlow, F. W., in *Arch. Ophth.* 16:6 (December)
4. Abrahams, S. V., in *Am. J. Ophth.* 14:656 (July) 1931.

L. Hughes⁽⁵⁾, in a series of 10 cases, thought that 3 of them gave evidence of this. In some cases the occlusion of one eye results in findings of no value. On the other hand Bielschowsky⁽⁶⁾, in his lectures on motor anomalies, speaks approvingly of it. Hughes⁽⁵⁾ found that it was of considerable aid in the diagnosis of latent phorias in 6 of the 10 cases referred to above. Hermann M. Burian⁽⁷⁾ stated that Marlow's test was most valuable in certain cases in determining the position of rest. He commented on the great variability of measurements in phorias, and quoted Gualdi, who in 1932 investigated persistent convergence with accommodation after one eye had been enucleated. The latter found that this persisted sometimes over a year after the enucleation.

The indication for the prolonged occlusion test is the inability to relieve asthenopic symptoms by careful refraction and correction of manifest heterophorias. I usually do two or more refractions under adequate cycloplegia prior to its application, in order to be as certain as possible that the discomfort is not due to the refractive error. The most prominent symptom has been headache.

An opaque patch is placed over the non-dominant eye, and kept there day and night, preferably for at least ten days. If it is removed for any purpose the patient keeps the eye closed. The occlusion is not removed until the patient is seated behind the phorometer. After the determination of the phorias, appropriate temporary prisms are ordered, either in clip-overs or in frames. More attention is paid to the vertical imbalance than to the lateral. The strength of the correction may be varied after a week's trial.

Report of Cases

Case 1. R. D. L., aged 29, complained of vertigo and nervousness. This was more or less constant, and was accentuated by use of his eyes. A moderate hyperopic astigmatism was corrected. There was 5 prism diopter exophoria at twenty feet, and a 12 prism diopter near, with weak adductive power, indicating a divergence excess. Adduction exercises were given until the adductive power was above normal. The symptoms persisted. One eye was occluded for twelve days, during which time he was symptom

free. Then there was found an exophoria of 12 prism diopters for distance, and 23 for near. He had a 6 prism diopter vertical imbalance for distance and near. After trying several corrections, a 4 prism diopter base in and 2 prism diopter vertical correction was ordered. This gave considerable relief, but he still had some vertigo. In light of subsequent cases, I believe he should have had fuller correction of the imbalance.

Case 2. S. M., aged 30, had severe headaches, which were worse after reading or sewing. The only manifest finding, after correction of the refractive errors, was an exophoria of 12 prism diopters for near. After occlusion there was an exophoria of 14 prism diopters for near, with no vertical imbalance. There was no attenuation of her symptoms during the test. The results were not conclusive. Her opposite eye should have been occluded, but this was refused.

Case 3. T. M. B., aged 27, had frontal headaches for several years. Correction of a moderate compound myopic astigmatism gave no relief. Her manifest muscle balance tests showed a questionable vertical imbalance for near. Three years later, during a twelve day period of occlusion, her headaches left. One prism diopter of vertical imbalance was corrected, with considerable relief.

Case 4. D. M., aged 29, had had headaches for several years, which came as severe attacks, with a constant dull pain during the period between. The right side of her head was affected every time, and the pain started over her right eye. The pain was so severe that morphine was necessary, and a general practitioner had given her chloroform in an attempt to ease it. She had become psychotic, and spent two weeks in an institution. Upon refraction, a small compound hyperopic astigmatic error was found. She had an exophoria of 14 prism diopters for near. I had no idea that these symptoms could be coming from her eyes, but as a last resort, I suggested occluding one eye. Several days later she drove sixty miles to thank me for the first complete relief that she had had from headache in a number of years. The findings after occlusion were an exophoria of 14 prism diopters for distance, 30 for near, and a 10 prism diopter vertical imbalance. Six prism diopters of this vertical imbalance was corrected, with practically complete relief over a period of two years.

5. Hughes, W. L., in *Arch. Ophth.* 11:2 (February) 1934.

6. Bielschowsky, A., in *Am. J. Ophth.* 3, 21:10.

7. Burian, Hermann M. Personal communication to the author.

Then, during a pregnancy, she found that she could get along very well without the prisms at times without a return of the headaches.

Case 5. E. R., aged 20, complained of her eyes hurting and headache after use of her eyes. A moderate hyperopic astigmatic error was corrected, with no relief from her symptoms. She had an exophoria of 3 prism diopters for near. During the time that one eye was occluded there was no relief of her symptoms. After occlusion there was an exophoria of 5 prism diopters for distance, 10 for near, with a 4 prism diopter vertical imbalance. Varying prism corrections did not relieve her headache. She was found to have some thyroid disturbance. The vertical imbalance here was probably Bell's phenomenon.

Case 6. G. M., aged 40, had headaches for several years, which she thought were worse with use of her eyes. There was nothing in her refraction to cause them. She had an exophoria of 11 prism diopters for near. After occlusion for ten days, she had an exophoria of 6 prism diopters for distance, 14 for near. There was 1 prism diopter vertical imbalance. Her headaches were not relieved during the period of occlusion. Unless this was a case of aniseikonia, I do not feel that her eyes were at fault.

Case 7. C. H., aged 47, had a headache that suggested sinusitis, coming on when she awakened, and getting better during the day. She had no sinusitis. She was hyperopic, with a presbyopic addition. Her blood pressure had been elevated. She had an exophoria of 16 prism diopters for near. After occlusion she had an exophoria of 3 prism diopters for distance, 22 for near, with a 2 prism diopter vertical imbalance. With correction of half of this vertical imbalance added to her original correction, her headaches disappeared.

Case 8. N. C. M., aged 36, had occasional sick headaches, sometimes involving only half of her head. There was a moderate compound hyperopic astigmatism, and an exophoria of 11 prism diopters for near. Her headaches continued after glasses were given. After occlusion, she had an exophoria of 6 prism diopters for distance, 22 for near, with no vertical imbalance. Adduction exercises were given with partial relief. A persistence in them might have afforded better results.

Case 9. E. C., aged 35, had severe headaches for several years, made worse by using her eyes. Neither her refraction or muscle balance gave any clue to the cause. During the period of occlusion, her headaches were less frequent and less severe. She had an exophoria of 2 prism diopters for distance, 16 for near, with a vertical imbalance of 4 prism diopters for distance and 3 for near. Various prismatic corrections gave only partial relief. She was referred to Dr. Emory Hill, who felt that she had much more vertical imbalance than was apparent, even after occlusion. While under observation, she became psychotic, and was sent to an institution. This represents to me one of those complicated cases, where undoubtedly several factors worked together to produce her symptoms.

Case 10. J. W., aged 23, had dull fronto-occipital headaches, not related to the use of her eyes. Her refraction and manifest muscle balance were within normal limits. After occlusion, she had an exophoria of 4 prism diopters for distance, 16 for near, and a 5 prism diopter vertical imbalance. Correction of 3 prism diopters of the vertical imbalance gave her considerable relief. Her headaches were better during the period her eye was occluded.

Case 11. F. L. T., aged 28, had had fronto-occipital headaches for years. One eye was corrected with a strong hyperopic cylinder, the other with a mixed astigmatic correction. Her muscle balance was normal. After several refractions, which did not vary, one eye was occluded, after which she had a 4 prism diopter exophoria for distance, 18 for near, and 4 prism diopters of vertical imbalance. Correction of the vertical deviation with varying strengths of prisms did not give relief. Her eyes did not pain her during the period of occlusion, but her headaches continued. She was under observation for over a year. This was probably a case of aniseikonia.

Case 12. O. H. B., aged 26, had had headaches all her life. Her refractive error could not have accounted for it. Her muscle balance was normal. During the period of occlusion, there was no change in her symptoms. Her latent phorias were 5 prism diopters for distance, 18 for near, with 1 prism diopter vertical phoria. Prisms did not help. Perhaps if her opposite eye had

been occluded, the findings might have given some clue to the etiology of her symptoms.

Case 13. L. H., aged 39, had a parietal headache, which was made worse by sewing. She was moderately hyperopic, but correction of this gave no relief. Her muscle balance was normal. During the time of occlusion of one eye, her headaches disappeared. She had after this an exophoria of 8 prism diopters for distance, 18 for near, with 7 prism diopters of vertical imbalance. A 4 prism diopter correction of this vertical imbalance helped her considerably.

Case 14. T. E. C., aged 30, had had headaches for a year, unassociated with the use of her eyes. She was slightly hyperopic, with 1 prism diopter of vertical imbalance. Occlusion was done, during which time her headaches were better. A hyperphoria of 3 prism diopters for distance and 2 for near developed, with an exophoria of 16 prism diopters for near. A 1 prism diopter correction of the vertical imbalance helped some. This was another case in which it would have been wise to occlude the other eye.

Case 15. W. D. C., aged 29, had had headaches frequently for several years, but particularly after attending the movies. A compound hyperopic correction did not help. Her muscle balance was normal. She was firmly convinced that her eyes were causing her headaches. After occlusion, she had an exophoria of 14 prism diopters for near. It was felt that her headaches were not due to any latent phoria, and further general medical study was advised.

Case 16. E. B., aged 27, had headaches and photophobia, with a feeling of enlargement of her left eye. She was slightly hyperopic, and had 1 prism diopter of left hyperphoria. With the thought that this might indicate further muscle trouble, occlusion was done. Afterwards, she had an exophoria of 6 prism diopters for distance, 30 for near, and a $3\frac{1}{2}$ prism diopter right hyperphoric imbalance. She was better without any vertical correction. Her near point of convergence was 10 cm. before occlusion. Adduction exercises are being used. If her symptoms continue, the other eye will be occluded.

Case 17. L. D. M., aged 34, had had fronto-occipital headaches for several years. She was wearing a marked over-correction for her moderate compound hyperopic astigmatic error. The proper lenses did not help

her headache. She had a manifest exophoria of 16 prism diopters for near. After occlusion, she had an exophoria of 16 prism diopters for distance, 30 for near, and a 7 prism diopter vertical imbalance. Correcting 3 prism diopters of her vertical imbalance gave her definite relief, and she can go to the movies without headache. No permanent correction has been given yet, as it is thought that her exophoria should be investigated further.

Summary

Case histories of 17 patients having symptoms that might be due to eye trouble showed that the majority of them had latent phorias that became manifest after prolonged occlusion. Several patients were relieved by correction of such phorias.

Abstract of Discussion

Dr. V. M. Hicks (Raleigh): I want to congratulate Dr. Fay upon this very practical paper. Dr. Fay's paper deals with matters that require about 90 per cent of the time of the ophthalmologist—the process of examination and refraction.

The question of phorias does constantly escape our attention in refraction, and as has been pointed out by Dr. Fay, it is a very important thing in many cases. We should give these patients enough time, by repeated examinations, to satisfy our minds that we are dealing with a muscular imbalance, and we should let the patient have a general survey by our medical confreres before we finally decide what we are dealing with. These patients are highly co-operative as long as you show interest in them. Too frequently we do not even use the Maddox rod test in doing an ordinary refraction. Very frequently a manifest hyperphoria shows up in a case which has previously been refracted, and if you will quiz the patient you will find that he never had a Maddox rod test done before.

There is one point that I would like to make in this question of latent hyperphoria: That if, when you suddenly remove the cover from the one eye the patient is a little slow in saying that the vision is better, you can suspect, I think, that you might be dealing with a phoria.

In most cases, when the shade is removed from the one eye, they will promptly say, "That is much better." I don't believe I have ever found a latent phoria where the patient responded with that statement. They are a little bit slow in fusing.

I have found, in cases of muscular imbalance, particularly among women, that anemia is a very common condition, and that until it is relieved, they are going to have muscular imbalance, just as they have muscular trouble, if they undertake to walk two miles a day, with their leg muscles.

Many patients who respond to suggestion will be very much better for a while if you give them prisms, but if you will check them over after a period of six or eight months, or a year, you will find they are having trouble again.

I think Dr. Fay's occlusion period of eight or ten days for latent phorias is highly practical, and I do not remember that it has been brought to the attention of the Society before.

Chairman Kerns: Is there any further discussion? If not, I will ask Dr. Fay to close.

Dr. Fay: The point Dr. Hicks has made about reduced vision in the presence of latent phorias is very true. It is an excellent quick test to determine whether there is any phoria.

Ordinarily, binocular vision is superior to monocular vision even in cases where vision is much better in one eye than in the other. However, in the presence of phorias you almost always notice this reduction in visual acuity when you remove the cover and the patient looks with both eyes.

Along with anemia, there are various endocrine disturbances which may affect vision. You probably noticed that 16 out of these 17 patients were women. Undoubtedly some of these patients had anemia. I had most of them studied medically and neurologically before I put them to this prolonged occlusion test.

You do have to watch carefully the idea of suggestion, which, I believe, accounts for probably 50 per cent of the beneficial results with that isekonic lens.

All of my cases, with the exception of the last two, have been under observation for periods of from two to five years, and most of them are holding up all right. I don't give prismatic correction until I have tested them and found the most beneficial correction.

FULL TERM INTRA-ABDOMINAL PREGNANCY

Report of a Case

R. A. WHITE, M. D.

ASHEVILLE

Full term extra-uterine pregnancy is extremely rare. According to Bland⁽¹⁾ from 1813 to 1907 there were 240 cases of full term extra-uterine pregnancies with live fetuses reported, with a maternal mortality of 34.7 per cent. From 1907 to 1923 there were reported 61 additional cases with a maternal mortality of 16.7 per cent. Since 1923 he has found 20 others recorded, making a total of 321. Bland further states that "if the child should be delivered alive nature seems to have exerted her utmost to effect its destruction, for only a small number live. A healthy living child is very seldom found . . . in more than 60 per cent it is seriously deformed, the deformity involving the skull, the brain, the spinal column, the cord, the extremities or the viscera."

Hellman and Simon⁽²⁾ made an exhaustive study of the literature from 1809 to 1935, and were able to collect 311 cases of intra-abdominal pregnancy continuing beyond the

twenty-second week. To this list they added 5 cases reported for the first time, making a total of 316 cases. Of the 316 cases studied by them 158 fetuses lived—that is, survived eight days or longer. Of the 316 mothers, 212 lived, 101 died, and the outcome of 3 cases is unknown. In the whole series there were only 80 cases in which both mother and child survived.

The purpose of this paper is to report in detail a case in which the mother and baby are alive and well after six weeks.

Case Report

B. B., a colored woman aged 30, was admitted by ambulance to Mission Hospital and assigned to the surgical service of Dr. W. P. H., at 6 p.m. on October 24, 1939. Her complaints at this time were: (1) pain in the lower abdomen since July, a period of four months; (2) an increasing enlargement of the abdomen; (3) amenorrhea since May, 1939, except for one period in August, the nature and duration of which could not be determined.

Nothing could be learned of her family history or marital history. She stated that her menses began at 13 years, were regular every twenty-eight days, lasting four to seven days, and were never profuse or painful. She had had two miscarriages—one in 1937 at about the third month of gestation, another in 1938 at about the fourth month. She had had no trouble with either. Nothing further could be learned of her past history.

Examination: "Nothing of particular interest could be found on general physical or neurologic examinations. The temperature was 99, pulse 96, respirations 20. The teeth were in poor condition, many missing and many decayed. The thyroid was slightly enlarged. Lungs and heart showed nothing abnormal. The extremities were normal. The blood pressure was 110 systolic, 70 diastolic. There was no tenderness and no masses in the upper part of the abdomen. In the lower part was a symmetrical ovoid mass extending to the umbilicus. The fetal outline was easily felt, and the fetal heart tones were easily audible; the position seemed to be transverse, and near the surface. Pelvic examination revealed a soft, tightly closed cervix, and a small amount of mucopurulent discharge. There was a mass continuous with the cervix and apparently with the abdominal mass which was the size

Read before the Section on Gynecology and Obstetrics, Medical Society of the State of North Carolina, Pinehurst, May 15, 1940.

1. Bland, P. Brooke: Practical Obstetrics for Students and Practitioners, p. 288-289.

2. Hellman, Alfred M., and Simon, J. Herbert: Full Term Intra-Abdominal Pregnancy, Am. J. Surg., New Series 29: 403, 1935.

and shape of a pear. Ectopic pregnancy is suspected."

Laboratory findings. The urine was amber, cloudy, and acid, with a faint trace of albumin and sugar; there were many leukocytes and a few bacteria, and a 2 plus reaction for acetone. A blood count showed erythrocytes 3,870,000, and leukocytes 14,300, with polymorphonuclears 78 per cent, lymphocytes 18 per cent, mononuclears 3 per cent, and basophils 1 per cent. The hemoglobin was 65 per cent. The Wassermann reaction was negative; the Kline was 3 plus. An x-ray of the abdomen (fig. 1) showed a fetus at about the fourth month of gestation, lying on the left, with the head at the level of the third and fourth lumbar vertebrae, the breech down. The comment was: "Fetal ossification is rather light. This may not be significant. High position on left is probably significant and suggests ectopic pregnancy."

(These reports were not seen by us until after operation.)

During her stay in the hospital the patient was given a full diet with plenty of fruit juices, a mild sedative (codeine gr. $\frac{1}{2}$ being sufficient to control pain), and bed rest. I saw her in consultation on November 1. While I considered strongly the possibility of ectopic pregnancy I decided against it, because of the symmetry and central location of the abdominal mass, and the relatively little pain. The pelvic tumor impressed me as being either a uterine fibroid or an ovarian cyst. I suggested some luteinizing hormone. She was given three injections of antuitrin S, and left the hospital "improved" on November 2, 1939.

She was not seen by any of us again until February 6, 1940, when she came to the city prenatal clinic and was seen by Dr. E. Brownsberger, who made the following report: "She is very thin and sick looking, and complains of feeling poorly and has a 'misery' in her side when she stands on her feet. She has no bleeding or vaginal discharge and complains only of weakness and abdominal pain. She says she weighs less now than when she was sick in October. She is constipated and has urinary frequency. Examination: Temperature 98.2, pulse 100, blood pressure 100/70. No urine specimen obtained. Blood showed Kolmer. 4 +. Kline 3 +. Abdomen enlarged to what appears to be near term. Fetal heart heard in upper left quadrant, rate 160."

On her second visit to the clinic on February 12 her temperature was 98; pulse 100; blood pressure 115 systolic, 70 diastolic. The urine was turbid, straw colored, and acid; the specific gravity was 1.025, with a heavy trace of albumin and many pus cells. The presence or absence of pain is not mentioned.

On February 27 her temperature was 98, pulse 82. The blood pressure was 105 systolic, 80 diastolic. The fetal heart rate was 140, regular and strong in the upper right quadrant. "There is a hard mass which may be the fetal head lying directly below the umbilicus. It seems larger than normal for the size of the fetus. The small parts are distinguished on the right. There is nothing in the fundus or over the inlet which could be the fetal head. The fetal ovoid is longitudinal. Vaginal examination was not done, as she seems near term."

On March 1, three days later, she was brought to my office for examination, and she was seen again at the clinic by Dr. Brownsberger, little or no change having taken place since February 27. Pain seemed to be the only complaint, but at no time was it so severe as to require sedatives.

On March 16 she was brought to my office again. Let it be remembered that her last regular menstrual period was in May, making her due in February; that on October 25 the fetal outline could be palpated, movements were felt subjectively and objectively, the heart tones were audible, and Dr. MacRae estimated from the x-ray examination that the patient was six months pregnant.

She was able to be up and about the house, to come to the office in an automobile with the social worker, to get on and off the examining table without difficulty, to dress and undress herself. She did not seem to be in any especial pain. She was cheerful and smiling. Her temperature was 98.2; pulse 92; weight 117; and blood pressure 130 systolic and 80 diastolic. The abdomen was a most peculiar shape, a sort of "double decker" with the upper story the larger and in it a live and active fetus. The wall was thin; the heart beats were 148, heard just to left of the midline, above the umbilicus. The head, which seemed abnormally large, was literally in the middle of the abdomen. The body and small parts seemed intermingled in the upper abdomen. The lower abdomen was filled with an ill defined mass, a sort of pedestal. I suspected a distended bladder, but on catheterization there was no



Fig. 1. X-ray of the abdomen, showing the fetus lying on the left.



Fig. 2. Cystogram done two days before operation.

residual urine and the mass was not changed in size or shape.

Pelvic examination. The vagina was normal in size and shape (nonparous), and there was a small amount of mucous discharge. The cervix could just be reached, and was large and soft and closed. There was a firm, rounded mass to the left of the midline the size of an orange, pear shaped, and continuous with the softer poorly defined pedestal which filled the false pelvis and the space between the symphysis and the fetal head. The center of the fetal head was marked by the umbilicus. My impressions were: (1) extra-uterine pregnancy; (2) placenta previa with large uterine fibroid or ovarian cyst. She was sent from my office to the hospital. A cystogram (fig. 2) was done the same day, with the following report: "Single, small fetus. Head very high with back to right and marked flexion. Pelvis very small. A large mass interposed between head and bladder. Type of tumor undetermined."

On the following day, March 17, Dr. H. S. Clark on surgical service was called in consultation and made the following notation: "From the size of the pelvis and the large uterine tumor, I believe normal delivery

would be next to impossible. Porro operation would seem the most logical procedure."

The operation was performed on March 18 by Dr. Clark and myself. Cyclopropane and ether were used as the anesthetic. A long left paramedian incision was made. The structures beneath the peritoneum were so confusing that the abdomen was finally entered above the level of the umbilicus. Immediately beneath this point was the fetal head covered only by the amniotic sac, with the body and limbs filling the upper right abdomen. There was a very small quantity of fluid, turbid and brownish in color. The sac was ruptured and the baby delivered. The placenta was found to be attached by a pedicle to the right broad ligament and the anterior parietal peritoneum, and adherent to the anterior surface of the uterus. There was also an apron of omentum containing large vessels attached to the placenta. The placenta itself was entirely enclosed in a membrane. There was apparently no villous attachment to any maternal tissue.

The placenta was dissected free from its various attachments, which were ligated with chromic catgut and divided. There was very little bleeding. The uterus was found to be two or three times its normal size and

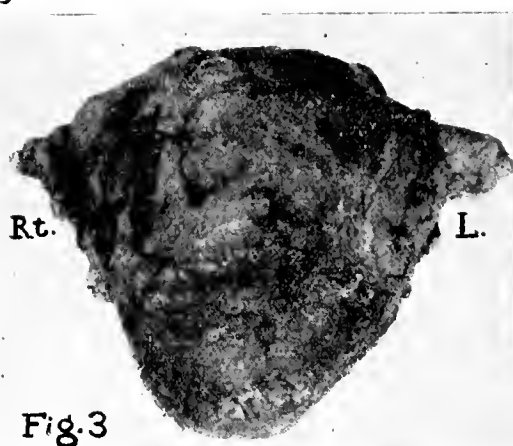


Fig. 3

Fig. 3. The uterus. (U. S. Army Medical Museum, Neg. No. 69774).

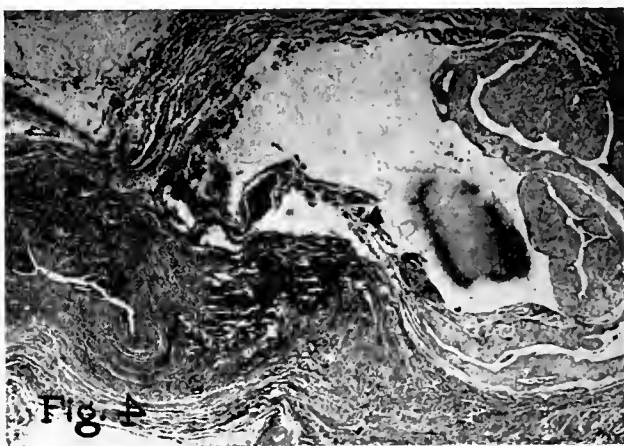


Fig. 4

Fig. 4. Section from the right tube. (U. S. Army Medical Museum, Neg. No. 69863).

studded with small leiomyomata. The right tube was normal in appearance, the ovary greatly enlarged. This ovary was horse-shoe shaped and had the appearance of a ruptured cyst. The left ovary was normal, the tube edematous and cystic. The uterus was clamped off and removed supracervically; the stumps of the ligaments were anchored into the cervix, and the raw surfaces covered with peritoneum. The appendix was removed prophylactically, and the abdomen closed without drainage.

During the operation the anesthetist gave ephedrine once. No other stimulant was used. The patient left the table in good condition. She was given 1000 cc. of 10 per cent glucose in saline immediately after operation and on the following morning. There was no other special medication.

On the third postoperative day, she had a rise in temperature to 102 F. This was coincident with the breast engorgement and came down rapidly. There was no other rise of temperature above 100.2 throughout her stay in the hospital. The wound was dressed on the tenth postoperative day. There were two small stitch abscesses. The stitches were removed. The patient was up in a chair on the fourteenth day, and was discharged on the seventeenth day in good condition.

She reported at my office four weeks after operation. The wound was clean and well-healed. There was a very slight mucosanguineous vaginal discharge. The cervix was clean. There was no pelvic induration. Her general condition was good.

Histopathologic Report

The placenta is roughly spherical, and the

maternal surface is covered by a thin, grayish white membrane with tags of fat containing large blood vessels attached. There are numerous large infarcts in the placenta both on the maternal and fetal surfaces. The fetal membranes are thickened and edematous. The cord is large and inserted at the margin. The uterus (fig. 3) is enlarged to approximately 7.5 cm. in length and 7 cm. in width at the fundus, and there is a supracervical fibroid 2.3 cm. in diameter with several smaller fibroids in the wall. The myometrium is hypertrophied. The endometrium is thickened. The left tube is cystic and dilated at the uterine end, and the cysts are filled with coagulated fluid. The right tube is small. Both have been amputated near the uterus.

Microscopic: A section from the uterus shows some hypertrophy of the muscle fibers and edema of interstitial tissue. There are numerous blood vessels with some thickening of their walls. The endometrium shows a marked decidual reaction, with only an occasional slightly dilated gland in the basal portion. There are numerous large blood vessels and patches of granular leukocytes, particularly in the basal portion and in the adjacent myometrium. A small fibroid is composed of interlacing bundles of spindle shaped cells.

A section from the left cystic stump shows the cysts to have thin fibrous walls with low cuboidal lining cells. The cysts are filled with serum, which contains many large foamy cells. The tube wall is edematous and congested, with occasional papillary folds projecting into the cyst lumina. These folds are covered with a single row of low

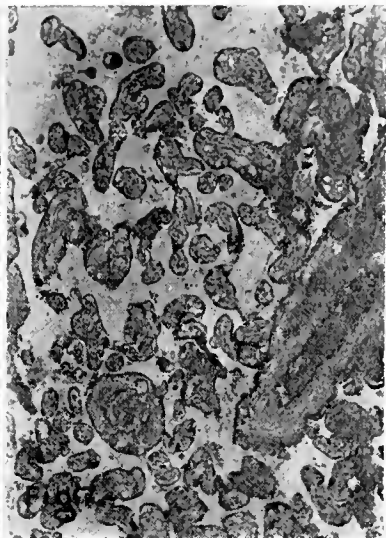


Fig. 5. The maternal surface of the placenta. (U. S. Army Medical Museum, Neg. No. 69777).

Fig. 6. Section from the maternal surface of the placenta (U. S. Army Medical Museum, Neg. No. 69865).

Fig. 7. Section from the maternal surface of the placenta, highly magnified. (U. S. Army Medical Museum, Neg. No. 69864).

columnar or cuboidal cells which show no cilia. In the wall and the papillary folds, and beneath the peritoneal covering are nests of decidua-like cells. In the wall there are a few chronic inflammatory cells.

A section from the small right tube (fig. 4) shows edema and congestion of the wall with a thick walled vessel and the mucosal folds showing a marked decidual cell reaction. The lining cells are low cuboidal and show no cilia. The serosal covering is edematous, and there are scattered collections of decidual cells beneath the swollen mesenchymal cells of the serosa. Many of these are definitely in the adventitia of blood vessels.

Sections from the maternal surface of the placenta (figs. 5, 6, and 7) show a large anemic infarct and a small hemorrhagic infarct. The surface is covered with a membrane which shows no characteristic histological structure. The chorionic villi are small, well developed and contain thin-walled blood vessels.

Sections from fat tags attached to the maternal surface of the placenta (fig. 8) contain numerous blood vessels, some of which are large and thick walled. There are small collections of round cells about some of the smaller vessels. There are also scattered small collections of decidua-like cells in the connective tissue and about some of the smaller vessels. These vessels probably form the chief blood supply to the placenta.

Note: The decidual reaction in the right tube would suggest a primary tubal pregnancy which terminated in one of two ways: (1) Rupture between the layers of the broad ligaments and continued development into the broad ligament and abdominal cavity. This would account for the covering over of the maternal surface of the placenta. (2) Incomplete tubal abortion through the fimbriated end of the tube, the placenta retaining part of its blood supply from the tube and becoming secondarily attached to other abdominal viscera.

Histopathologic Diagnosis

Tubal pregnancy with secondary abdominal pregnancy developing to term.

Hypertrophy of uterus, due to pregnancy.

Decidual reaction of endometrium, right tube; serosal surface, both tubes.

Hydrosalpinx, chronic left.

Leiomyoma of the uterus.

The Baby

While the baby appeared rather small for a full term infant and weighed less than 5 pounds he was well developed, and, therefore, probably immature rather than premature.

The head was of normal shape and size, and did not show any effect of molding. The anterior fontanelle was of normal size and shape. The posterior fontanelle was rather large.



Fig. 8. Section of fat tag attached to the maternal surface of the placenta. (U. S. Army Medical Museum, Neg. No. 69868).

The eyes, ears, nose and throat were normal.

The palatine arch was a little high.

There was a slight deformity of the thorax, of the pigeon breast type. However, the heart and lungs showed no abnormalities.

The abdomen was soft and not distended. The liver and spleen were of normal size. The umbilical stump appeared normal.

The only peculiarity revealed by the examination was that the vernix caseosa was entirely wanting, and in its stead nature had supplied an extra covering of epidermis, which was desquamated within a few hours after the baby was born.

The baby took its food fairly well from birth, and on April 22, 1940, weighed 6¼ pounds. The slight chest deformity had practically disappeared, and the baby appeared to be normal in every respect.

Abstract of Discussion

Dr. Oren Moore (Charlotte): I think the most remarkable thing was the size of the baby, that it weighed five pounds.

Potter described three cases in which he made the diagnosis and operated, with a safe delivery.

I saw one case of ectopic pregnancy, myself, but it was thirteen years from the time the patient went into labor. Old "Quit" Houston who used to keep the Post Office up in Davidson and practiced a little medicine on the side, attended the woman in labor. She quit labor and he went home. That is where he got his name. He left. She didn't report back any more. Thirteen years later she was brought to Charlotte because she had a sinus under the umbilicus which constantly drained. There was a large and undistinguished mass in the abdomen. We went in and found a little stone idol of a baby, left there after an extra-uterine pregnancy.

Dr. Leslie Lee (Kinston): I have also had a case of full term ectopic pregnancy.

There is very little to discuss in connection with it. Of course, the etiology is something we do not know. It is extruded directly in the abdominal cavity. Why it gets there we do not know. The peculiar thing about the case that I recall is that the woman had labor pains. I thought she was in labor. I watched her for about twelve hours, and the cervix didn't dilate. I decided it wasn't going to dilate, and started to perform a section. When I opened the abdomen, the live fetus was in the abdominal cavity. The attachments were similar to those in Dr. White's case. However, the baby lived only thirty-six hours.

Sterilization of Surgical Instruments by Di-Ethylene Glycol.—Sterilization of surgical instruments by boiling water involves disadvantages: the boiling point of water is relatively low; mineral deposits or stains may occur, especially if the water is hard; and there is a tendency for boiling water to dull the edges of cutting tools. Di-ethylene glycol is relatively free from these objections. While it may fume on heating, this is negligible when small sterilizers are used. If an electric sterilizer is set at "low", the temperature of the liquid rises to about 150 C. As its boiling point of 250 C. is approached, it fumes more markedly, but adequate sterilization should be obtained at temperatures where fuming is not apparent. On standing it evaporates very slowly so that only small amounts at infrequent intervals need be added to the sterilizer to keep it full. Di-ethylene glycol leaves neither stains nor deposits on the instruments. It has no appreciable dulling effect on cutting edges. Since it is completely soluble in water, di-ethylene glycol residues may be promptly removed by dipping the heat-treated instruments in sterile water before use. Finally di-ethylene glycol is relatively inexpensive and readily available from chemical supply houses. These observations are based on two years' exhaustive trial with the compound in comparison with many others recommended for sterilization of dental instruments.—Charles Gurchot and Newton D. Mellars, in *Science*, 92:516 (November 29) 1940.

Birth Control Poll in Connecticut.—During August the Connecticut Committee To Make Birth Control Legal issued a statement that a personal poll completed by volunteer interviewers showed 93 per cent of the citizens of this State favored giving doctors the legal right to furnish birth control information. Under the direction of a board of directors of 22 members and executive committee of 14 members the committee is now engaged in organizing local groups throughout the State to conduct a widespread education program, looking toward a revision of the present law.—*Connecticut State Medical Journal*, 4:594 (October) 1940.

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FEBRUARY, 1941

DR. TOM LONG

It is hard to believe that Tom Long is dead, even after reading and re-reading the Associated Press dispatch in the daily papers for February 4, saying that "Dr. T. W. M. Long of Roanoke Rapids, state senator and author of a large portion of North Carolina's 'Good Health' legislation, died unexpectedly here last night of a heart attack." He was so buoyantly alive, enjoyed living so much, and brought so much cheer into the lives of all who knew him well, that even after reading the newspaper story of his sudden death, one feels that he must wake to find it all a dream.

It is fortunate that we, with our limited knowledge, do not have to explain why a life so useful, so full of achievements, and so rich in promise of further performance had to be ended so abruptly. His friends know, however, that Tom Long's end came as he would have planned it, at the close of a full day's work, and while he was still in the full vigor of manhood.

It is needless to tell North Carolina doctors what Tom Long has meant to the medi-

cal profession of the state. Those who have served with him on the Board of Examiners, on the Board of Directors of the North Carolina Sanatorium or of the State Hospital, or on the Executive Committee of the State Society know how unsparingly he gave himself to meeting every obligation placed upon him. To him public office was literally a public trust. His long and faithful service in the upper house of the state legislature was largely responsible for much, if not most of the progressive health legislation enacted during the past decade. His personality so impressed itself upon his colleagues that in announcing his death to the senate, Lieutenant Governor Harris said that "Without reflection on any member of the senate, Dr. Tom—as he was affectionately known—was the best loved member of this body."

Those who had frequent occasion to talk to Tom Long over the long distance telephone will recall his habit of closing the conversation with the phrase: "Good-bye, good luck, and God bless you." Let us hope that his spirit knows that his numerous friends are wanting to send this same message to him—Good-bye, old friend; good luck, and God bless you!

* * * *

WELCOME TO DR. TINSLEY HARRISON

It is good news to the friends of the Bowman Gray School of Medicine of Wake Forest College that Dr. Tinsley Harrison has been selected as its Professor of Medicine. At present he is Associate Professor of Medicine at Vanderbilt University. Dr. Harrison was brought up in a medical atmosphere, as his father and grandfather were both doctors. Born in Alabama, he got his academic degree from the University of Michigan and his medical diploma from Johns Hopkins. After serving his hospital apprenticeship in Boston and at Hopkins, he became the first medical resident at Vanderbilt, and was steadily promoted to his present position. Although comparatively young, he has already established a wide reputation as a forceful and inspiring teacher and as a brilliant research worker. He

will give his whole time to teaching and research.

On January 14, Dr. Harrison spoke to the students of the Duke Medical School on "Hypertension", and the next night he addressed the members of the Forsyth County Medical Society on "Pain in the Chest". On both occasions he made a most favorable impression. Dr. Harrison is not only a distinguished medical teacher; he is a cultured Southern gentleman of the highest type. On behalf of the Medical Society of the State of North Carolina, the NORTH CAROLINA MEDICAL JOURNAL extends a hearty and cordial welcome to Dr. Tinsley Harrison and his family.

* * * *

THE DRAFT BOARD EXAMINERS

True to tradition, the medical profession of the United States has offered its services to forward the defense program. An important and fundamental contribution is that of examining the draftees preliminary to selecting those to be sent to the induction camps. The doctors in civil practice who act as examiners for the draft boards are giving their time and professional skill to the government, without receiving a penny in return.

It would seem that common decency would require a certain amount of appreciation from the military representatives of the government; but thus far most of the public comment offered has been abusive criticism because the draft board examiners have not been perfect in their work. If this criticism had been made to the examiners themselves, it would have been accepted as constructive, and the doctors would have tried to profit. From the headquarters of the Selective Service in North Carolina a letter was sent to every draft board examiner, commenting favorably on the work done thus far, and tactfully pointing out ways of improving the examinations made in the future. It was the kind of letter calculated to make its recipient do his very best.

In contrast to this, however, is the attitude of other army officials. For example, a United Press dispatch from Memphis appeared in the *Twin City Sentinel* of January 24, under the flaming headline, "Much Delay Attributed to Examiners", which said in part:

"Two high ranking U. S. Army officers

said today that the national defense program was being burdened with expensive and unnecessary delay because draft board examiners are not following army physical standards in classing men for service.

"Major General Frederick H. Smith, commanding officer of the seventh field corps with headquarters in Birmingham, and Lieutenant General Ben Lear, commander of the Second U. S. Army, agreed that some individuals were undergoing unnecessary hardships in that they were being sent back home from army camps because of physical defects that should have been noticed by local board examiners.

"I understand this is taking place all over the country," Lear said. "It is resulting in a great, needless cost to the government."

The same paper, in reporting the recent American Legion meeting held in Winston-Salem, quoted Bruce Stubblefield, secretary of the American Legion's national rehabilitation committee, as protesting against the "inadequacy" of the army examinations. "Stubblefield declared that the average examinations given prospective army enrollees last only an average of about four minutes."

No one will doubt for a moment that some of the examinations have been done too hastily, and no one will contend that the draft board examiners are perfect. Let it be remembered, however, that they are giving their services to the government, while their critics are paid by the same government. Virtually every man who makes these examinations does so at the expense of his private practice. Instead of four minutes, the average examination will require much nearer forty minutes. The great majority of the examiners are honest, conscientious, able men, who do their very best. Surely they should not be publicly censured because they are not able within a few weeks to see the draftees from the military rather than from the civil viewpoint.

Much is said of the great expense incurred by the government in caring for soldiers who are found physically or mentally unfit after induction into the army. A simple and practical means of eliminating much of this expense would be to require the prospective soldier to serve a probationary period of three weeks to six months before he is actually accepted.

BROMIDE POISONING

At frequent intervals the Dios Chemical Company, of St. Louis, sends booklets to the physicians of the state advertising in a very insidious way the use of bromides in the form of their "patent" medicine, "Neuro-sine". They give the formula of their preparation, which obviously has nothing to recommend it over the plain sodium or potassium bromide of the pharmacopeia, dispensed in a vehicle such as syrup of sarsaparilla compound.

Their advertising matter, moreover, contains erroneous and misleading statements designed to convince the practitioner that bromide intoxication is both uncommon and relatively harmless. One reads that "mental symptoms due to bromides are uncommon"; that "bromides are of low toxicity"; and that "bromides do not cause mental deterioration". In other words, bromides are "safe". Every physician knows that one dose of bromide does not kill, and he knows also that when used properly the bromides do not seriously intoxicate; but what a great many physicians do not know is that the continued use of bromides does lead to serious intoxication and that death has been caused in rare instances.

Bromide intoxication has been studied carefully by Hanes and Yates, at Duke Hospital¹. They find that mild, yet disabling degrees of bromide poisoning are common, constituting by far the most frequent intoxication seen in a large medical clinic. From a study of 400 instances of bromide intoxication they conclude: (a) that bromide intoxication, more or less severe, is a widespread and prevalent condition; (b) that severe bromide poisoning produces marked mental changes. Approximately 5 per cent of admissions to mental hospitals are the result of bromide poisoning. These conclusions are not unexpected when one realizes that headache remedies such as bromo-seltzer, "BC" and capudine contain very considerable amounts of bromide. Doctors, also, who give their patients prescriptions for bromide without explaining the dangers of its continued use are guilty of producing many instances of bromide poisoning.

Finally, a word as to the proper use of bromide. It is not a good sedative, except

in such a condition as epilepsy; for bromide must be given for two days before its effects become manifest. The barbiturates are far superior, and every physician should know the properties of the various barbiturates in order that he may select the one needed to solve the problem presented.

1. Hanes, Frederic M., and Yates, Anne: An Analysis of 400 Instances of Chronic Bromide Intoxication, South. M. J. 31:667, 1938.

* * * *

A GULLIBLE SENATOR

According to the United Press, "The late blind senator from Minnesota, Thomas Schall, wanted so much to see that he paid the 'I Am' cult \$1,000 for a miracle." His widow testified, in the trial of ten members of this cult charged with defrauding their victims of \$3,000,000 through the mails, that her husband was promised a restoration of his sight. In order to bring this miracle to pass, the head of the cult said that "he must visualize a ray of light from the mighty I Am presence, passing through the head, moving out at right angles, passing through his eyes." Apparently this ray of light acted only through the medium of United States Treasury notes, and the inference is rather plain that the larger the denomination of the notes, the more effective they were in attracting the ray of light from the mighty I Am presence.

This story would be ludicrous if it were not tragic. It is hard to believe that a man with enough intelligence to acquire a seat in the United States Senate could so easily be duped by such an old racket. Albert Edward Wiggam gives as one of the marks of the educated man that he can not be sold magic. Judging from the gullibility of Senator Schall and of many other men with academic degrees, some of our educational institutions have failed sadly in their duty to many of their matriculates.

It does not make the average citizen feel any more comfortable to think that such a man could have an important part in shaping the destiny of our country. Let us hope that the average citizen will remember this insight into the scientific judgment of the politician, when the next bill is introduced in Congress to put medical practice in the hands of the politicians.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL
WINSTON-SALEM

Presentation of Case

Mr. T. R. H., a 30 year old white male, entered the hospital November 21, 1940, complaining of tenderness and swelling of the right testicle.

He was first seen at a hospital in the central part of the state in October of 1938, at which time a retrograde pyelogram of the right kidney showed the pelvis markedly deformed with dilatation and ulceration. By intravenous urogram the left kidney showed good excretion and distinct clear cupping of the calices, but no evidence of ulceration or tuberculous lesion; so a retrograde pyelogram was not done on this side for fear of carrying infection to the pelvis. Genital examination at this time showed no involvement suggesting tuberculosis. X-rays of the heart and lungs were normal. A diagnosis of tuberculosis of the right kidney was made and the right kidney was removed. He was discharged two and one-half weeks after operation with the wound entirely healed. He was next admitted to a hospital in the eastern part of the state in June of 1940, at which time his left testicle was removed for tuberculosis. Since then he has had a draining sinus in the left side of the scrotum and in the left inguinal region. He was next seen by his private physician because of swelling and tenderness of the right testicle which had been present several weeks. He stated that the swelling had reached the size of an egg and that the tenderness had diminished somewhat. In the skin of the scrotum there was a small nodule which measured 2 cm. x 1 cm. in diameter. The private physician found tubercle bacilli in the urine in considerable numbers, and sent the patient to the hospital with the diagnosis of tuberculous infection of the genito-urinary tract and tuberculosis of the bladder, hoping to get him in condition to do an epididimectomy.

By occupation the patient was a foreman of construction work. He was not married, and claimed to have been in good health. His family history was negative.

Physical examination revealed a well developed and well nourished male who did not appear acutely ill. His temperature was 100 F. His pulse was 80 and his respirations were 18. His lungs were clear and resonant. His breath sounds were normal and no rales were present. The blood pressure was 174 systolic, 110 diastolic. There were no masses, tenderness or rigidity present in the abdomen. Examination of the genitalia showed absence of the left testicle, with draining sinuses in the left inguinal region and on the left side of the scrotum. The right epididymis was swollen, tender and hard, and there was a nodule present in the skin at the base of the scrotum which was hard and slightly tender.

Laboratory work on admission showed 4,000,000 red cells, 15 grams of hemoglobin, and 6,000 white cells, with 75 per cent polymorphonuclears and 25 per cent lymphocytes. The urine was acid, with a specific gravity of 1.010, albumin (1 plus), and pus (4 plus); there were 50-75 red blood cells per high power field, and tubercle bacilli were present.

A flat film of the urinary tract on November 23 showed normal kidney and psoas outlines on the left. No stones were observed. An intravenous pyelogram showed practically no function. The film taken at the end of thirty minutes showed a small quantity of the opaque medium in the bladder, indicating that some function was present, but it was so slight that the pelvis and calices of the kidney were not outlined. On November 28 a cystoscopic examination was attempted under spinal anesthesia because of marked irritability of the bladder. Several strictures of the urethra were encountered which had to be dilated with No. 24 and No. 26 French sounds. These were thought to be tuberculous. The bladder neck was contracted and appeared to be definitely tuberculous, as did the rest of the bladder. The right ureteral orifice was atrophied and scarred. The left orifice appeared to be infected, and did not admit even a filiform bougie. A catheter was inserted 4 cm. into the left ureter, and a pyelogram was attempted by gravity. The x-ray showed a large area of opaque medium, somewhat fusiform in shape, extending as far as the upper border of the sacrum. There was apparently complete obstruction above this. The fusiform shadow was thought to be either extravasation or a saccular dilatation

of the lower ureter. On December 5 cystoscopy was again performed, and the bladder mucosa appeared improved. A No. 4 bougie was passed up the left ureter to the kidney pelvis, but nothing larger could be introduced. On December 11 cystoscopic examination was done for the third time, and the bougie only passed 7 to 8 cm. up the ureter. As a result of these examinations it was believed that the left kidney was tuberculous, and was not draining properly. A nephrostomy was done on December 14. During the operation the patient went into shock, but recovered under stimulants. The patient appeared to do fairly well following the operation and drained considerable amounts of fairly clear urine which contained large numbers of tubercle bacilli. Ten days after the operation he developed a swelling in the left side of the neck under the angle of the jaw which was thought at first to be a cervical lymph node. It was extremely painful and tender and rapidly increased in size. By the fourth day it was recognized to be in the parotid gland. He was given one treatment of x-ray over this region. It became fluctuant and was opened, and serous fluid was obtained. The drain was removed from the nephrostomy wound on the tenth post-operative day, because of the small amount of drainage. The swelling of the parotid gland was not associated with any elevation of temperature. The patient ran an irregular low-grade fever during his stay in the hospital. He expired about five days after the parotid gland began to enlarge.

Clinical Discussion

DR. V. M. LONG: It is obvious that we are dealing with a case of tuberculosis of the genito-urinary tract; therefore the question of a differential diagnosis should not enter seriously into the discussion. There are some features of this case that could be discussed.

First, this patient had his right kidney removed at another hospital. At this time a retrograde pyelogram was made of the kidney, a lesion was found which was diagnosed as tuberculous, and the right kidney was removed. The left kidney was examined by an intravenous pyelogram and was thought to be normal. An early lesion might not have shown up in an intravenous pyelogram, and it may have been a bilateral infection at that time. I feel that bilateral retrograde pyelograms should be made,

whether nephrectomy is contemplated or not. There are differences of opinion, however.

Second, in 1940 his left testicle and epididymis were removed and diagnosed as tuberculous. This showed that there was an infection of the prostate gland and seminal vesicles. Tuberculosis of the testicle is, in most, or practically all cases, secondary to involvement of the epididymis; therefore, if the case is seen early epididymectomy should suffice.

Third, in the early diagnosis of tuberculosis of the genito-urinary tract, or of the urinary tract alone, one's suspicion should be aroused when the urinalysis shows acid urine and pus cells. The urine should be repeatedly examined for tubercle bacilli in specimens taken at different times of the day, or in a twenty-four hour specimen. If the urinalyses are persistently negative, guinea pig inoculation or culture should be done. Should this also prove negative, then bilateral retrograde pyelography should be done if ureteral catheterization is possible; otherwise, intravenous pyelograms should be done.

Further comment seems superfluous, as I am quite certain that we are dealing with an advanced case of tuberculosis of the genito-urinary tract.

DR. FROST: What about the enlargement of the parotid gland?

DR. LONG: It is possible for the tubercle bacillus to get in the blood and lodge in the cervical glands.

DR. GRIMES: What did you find at the time of nephrostomy?

DR. FRED GARVEY: We found a definitely tuberculous kidney studded with small tuberculous nodules. The ureter was fibrous and the pelvis was thickened and leathery. On opening the pelvis we found the urine to be a very thin, buttermilk type of fluid under pressure. The interior of the kidney was cavitated, and there was a dilated major calix.

DR. GRIMES: Did the parotid swelling come up quickly?

DR. GARVEY: Yes. The parotid gland started swelling ten days after operation and came up in two or three days. The patient had been eating and apparently getting on all right until he developed this swelling; then he became very sick and toxic.

DR. McCANTS: The parotid infection was not thought to be tuberculous.

Clinical Diagnosis

Tuberculosis of the kidney with hypertension.

Dr. Long's Diagnosis

Tuberculosis of the genito-urinary tract.

Anatomical Diagnosis

Generalized miliary tuberculosis.

Caseous tuberculosis of seminal vesicles, prostate, right epididymis, left vas, left ureter and left kidney.

Healed tuberculous nodule in apex of right upper lobe.

Obstruction of left ureter by tuberculosis of left vas.

Nephrostomy, left.

Retroperitoneal abscess, left.

Acute pyelonephritis with multiple abscesses of kidney.

Staphylococcus septicemia.

Acute suppurative parotitis.

Tuberculous sinuses in scrotum and left inguinal region.

Surgical absence of right kidney, left testis and epididymis.

Pathological Discussion

DR. FROST: In this case we find that we are unable to put all our eggs in one basket. The general nature of the pathological findings has been indicated in the anatomical diagnosis. The left kidney shows three types of lesions. Beneath the cortex there are old caseous areas surrounded by moderately thick connective tissue capsules showing very little cellular reaction. These are taken to be healed tubercles. The second lesion is numerous miliary tubercles. The third lesion is an acute suppurative pyelonephritis with marked destruction of the pelvis and with the formation of numerous abscesses throughout portions of the kidney.

It is very probable that this patient had bilateral renal tuberculosis at the time that he was first seen. When he was admitted to this hospital I believe that he had active tuberculosis in the remaining epididymis, the prostate, seminal vesicles and bladder. The tuberculosis of the left vas had caused enlargement of the vas, which pressed on and obstructed the left ureter. Occupying roughly the area described as an extravasation of opaque medium during the pyelogram, there was a collection of fluid pus; therefore I believe that this shadow was due

to extravasation of opaque medium, and that this area subsequently became infected. Whether this area of infection or the nephrostomy wound was the original source I cannot tell, but the patient certainly had an acute suppurative process of the kidney in which staphylococci were easily demonstrated, with secondary staphylococcic abscesses in the left parotid gland, thereby demonstrating a staphylococcus septicemia. There was also an acute generalized miliary tuberculosis, from which the patient would soon have died had not the septicemia occurred.

CASE REPORT

NORTH CAROLINA BAPTIST HOSPITAL
WINSTON-SALEM

Clinical Discussion

By Dr. C. E. Gryte

A white male, 50 years of age, was admitted to the hospital complaining of shortness of breath.

For the past three years the patient had noted increasing difficulty in carrying out the ordinary activities of life. He had become short of breath, and occasionally had to sit up at night in order to breathe. He had noted intense pounding of the heart against the chest wall.

At about the same time that these symptoms began, a slight cough productive of a "blood stained" sputum was first noted. His symptoms had been progressive, so that in the month previous to admission he had been sitting up in a chair almost continuously.

He was seen by his local physician, who told him that his condition was due to the swelling in the right side of neck which had been present for sixteen years. He was placed on "a brown medicine", taken daily.

On July 18, 1940, he first noted swelling of the right arm and of both ankles, together with increased breathlessness, cough, and painful swelling in the right side of the neck.

During the course of the illness he had lost an undetermined amount of weight. He had always been very nervous. His appetite had been poor in the month before admission.

Family history and past history were non-contributory.

Physical examination revealed a dehydrated, emaciated, middle aged white male

sitting in bed in Fowler's position, in acute respiratory distress. The patient appeared highly nervous, and was over-active in his response to commands. The pulse was 130 on admission; respirations 40. The blood pressure was 115 systolic, 95 diastolic.

Eyes: There was marked exophthalmus. The pupils were round and reacted to light and accommodation. Vision was very poor. Examination with the ophthalmoscope showed that the media were clear, the discs distinct and salmon pink in color. The vessels were normal. **Mouth:** The buccal mucosa was blood-stained; gingivitis was present. The tongue was dark brown and coated. There was no tremor. **Neck:** The right supraclavicular fossa and the side of the neck were swollen and tender. Several lymph nodes, the size of lima beans, were palpable. The trachea was in the midline. No definite thyroid enlargement was noted. **Heart:** The apical impulse in the left midaxillary line was diffuse, and was 13 cm. left of the midsternal line. The right border was 3 cm. to the right of the midsternal line. The cardiac sounds were forceful; there was a sinus tachycardia, the rate 160. There were no valvular murmurs. **Lungs:** Expansion was limited bilaterally. There was diminished resonance in both bases, and to a slight degree in the right apex. Fine moist rales were heard in both bases. **Abdomen:** There was slight distension. The bladder was distended. **Genitalia:** There was slight edema of the penis and scrotum. The prostate was of normal size and consistency. **Extremities:** There was marked pitting edema of the right arm and of the legs up to the middle of the thigh. There was a fine to medium coarse tremor of the outstretched fingers. The reflexes were hyperactive.

Laboratory examination on August 4, 1940, gave the following findings: Red blood cells, 4,350,000, hemoglobin 85 per cent; white blood cells, 14,100, polymorphonuclear cells 90 per cent, lymphocytes 10 per cent. On August 5 the white cell count was 23,400, with polymorphonuclears 92 per cent, lymphocytes 8 per cent. On August 7 the leukocyte count was 16,900, with 86 per cent polymorphonuclears and 14 per cent lymphocytes. The Kahn test was negative.

Examination of the urine showed the specific gravity to be 1.021, with an acid reaction, no sugar, and a 2 plus reaction for albumin. There was a moderate number of

hyaline casts, some mucus, and a few white blood cells.

The stool was positive for occult blood. No ova or parasites were found.

Course in Hospital: The temperature varied from 100.6 F to 103.2. After five stormy days the patient expired rather suddenly.

Diagnosis:

1. Exophthalmic goiter with cardiac hypertrophy and decompensation.
2. Malignant changes in a previously toxic goiter.

Autopsy Findings

By Dr. J. C. Reece

Findings at autopsy revealed a fullness over the right cervical and right supraclavicular regions. Dissection into these areas showed a marked lymphadenopathy and cellulitis. Microscopic sections from the lymph nodes revealed the process to be an extensive lymphadenitis.

Each pleural cavity contained about 750 cc. of straw colored fluid, and many pleural adhesions were encountered. The lungs showed a marked degree of congestion, and several areas of consolidation were found. Microscopic sections from the consolidated areas showed a resolving pneumonia and infarction with necrosis of the lung substances.

The pericardial sac contained 250 cc. of fluid, and a few milk patches were observed on the epicardial surfaces. The heart weighed 485 Gm. Within the left ventricle, three large friable mural thrombi were found. On section their central portion was found to be composed of purulent material. Microscopically these lesions revealed an acute inflammatory exudate, and necrotic material.

The thyroid was quite nodular and enlarged. Sections revealed a diffuse toxic goiter and areas of malignancy.

The peritoneal cavity contained about 500 cc. of straw colored fluid. The liver and spleen were enlarged, showing a moderate degree of chronic passive congestion.

The kidneys showed a moderate degree of scarring upon the cortical surface, and on section a few dark areas of softening were found. Microscopic sections revealed these to be areas of infarction with necrosis of kidney substance. A chronic glomerular nephritis was also revealed by microscopic sections.

Pathological Diagnosis

1. Diffuse toxic goiter.
2. Malignancy of thyroid.
3. Cardiac hypertrophy.
4. Mural endocarditis.
5. Chronic passive congestion.
6. Resolving pneumonia.
7. Pulmonary infarction.
8. Chronic glomerular nephritis.
9. Renal infarction.

BULLETIN BOARD

PRESIDENT'S MESSAGE**OPPORTUNITIES IN MEDICINE****HUBERT B. HAYWOOD, M. D.**

Many careful and critical studies are being made in the field of medical economics by both lay and medical agencies. These are of vital interest to the medical profession. In the *Journal of the American Medical Association* for December 21 there appeared two articles which I would like to call to your attention. One was by Dr. Wilburt C. Davison of Duke University on "Opportunities in Medicine", and the other was by the United States Public Health Service. I shall quote some abstracts from these articles.

Dr. Davison tells us that today the opportunities in medicine are greater than those in any other profession. An average net income of \$3800 is a good reward, and it is proportionately higher for those showing greater qualifications. An improved quality of medical service by better qualified physicians is demanded by a more health conscious public. There has been a decreasing ratio of physicians to population. This proportion was 1 to 742 in 1940. The ratio of physicians to population is 69 per cent lower in the South than in the North. The South is predominantly a rural area; urban areas draw the most physicians. Medical students have increased in twenty-five years from 14,891 to 21,302, in spite of the reduction of medical schools from 96 to 77. North Carolina has one physician to 1,284 people. New York has one to 544 people. In 1906 51 per cent of young graduates located in towns of less than 5,000. In 1920 only 9 per cent of young physicians located in such places. The factors responsible for this are low financial return, scattered population,

and unsatisfactory living conditions. The distribution of physicians and hospitals are mutually dependent. The modern physician will rarely remain to practice in a community without hospitals.

The question of specialty is of interest. Only 25 per cent of recent graduates intend to do general practice. The number of general practitioners has been growing less. Eighty per cent of all disease can be treated successfully by the general practitioner. His volume of work enables him to charge lower fees than the specialist can. A real "bottle neck" is created, with 75 per cent of present graduates planning to be specialists and to treat the 20 per cent of diseases left in their classification. Competition and over crowding in the specialties have resulted in many Southern communities and the general practitioner, with reduced competition, has had a higher reward than the specialist.

An analysis of diseases in the South indicates that a general practitioner's work consists of obstetrics and gynecology 10 per cent, minor surgery 15 per cent, with the remaining 75 per cent divided into sixty-eight common conditions. Ninety per cent of general practice is done outside of the hospital. Approximately 55 per cent is done in the office and 35 per cent in the homes. About 75 per cent of office visits are for minor surgery, respiratory infections, general medical disorders and venereal diseases. Ninety per cent of home visits are for respiratory, general medical, and contagious diseases, obstetrics and minor surgery. Due to the reduced ratio of children to population, to preventive medicine, and to reduction of the child mortality rate, most of a general practitioner's patients are adults. Seventy-five per cent of the deaths among children are preventable. A recent analysis reports that 20 per cent of a general practitioner's income is from obstetrics, 30 per cent from pediatrics and 50 per cent from general medicine. Young graduates do not feel that general practice carries the same dignity as a specialty. A rural practitioner needs more prolonged training than a city practitioner, as he must be better able to meet his problems unaided.

The United States Public Health Service, in a recent survey of 8,758 white families, representing 39,185 individuals in 130 localities in 18 states distributed in all geographic sections, reported that 81 per cent of calls made by physicians were made by general

practitioners. Seventy-two per cent of all calls by any type of attendant were made by general practitioners. Twelve and five tenths per cent of all cases were attended by a specialist. Private group clinics attended 1 per cent of all cases. Three and 3 tenths per cent of all illnesses were attended by non-medical practitioners, including osteopaths, chiropractors, Christian Scientists, and other faith healers, naturopaths, midwives and chiropodists. Patients in the South gave the least patronage to non-medical practitioners; California gave the highest. Minor respiratory disease is still the leading complaint treated by osteopaths, with rheumatic disease being second. The chiropractor reverses this order. Backaches and other ailments occupy third place, while "nerves" receive much more attention by these types of practitioners than by physicians. When it comes to the number of calls, rheumatic diseases lead in the practice of both osteopaths and chiropractors, making up 13.6 per cent to 14.1 per cent of their entire practice, and requiring only 3.2 per cent of the care given by the medical practitioner.

One may conclude from these facts that the status of the general practitioner should be given more prestige in the eyes of the young physician, and of the public. The general practitioner will continue to do the bulk of the work, and by the excellence of his performance he can bring additional professional standing to his work and make it a specialty in itself. More careful attention by the specialist to the diseases which fall into the hands of the non-medical group will bring them back to medical care. The young graduate who desires to specialize should analyze his own qualities, his training, and the opportunities in the community in which he desires to locate before making his final and lasting decision.

The Meaning of Profession. — Feeling for the sufferings of other human beings—compassion, the good-will which rejoices because other men have been given the opportunity to realize their highest sense of the worth and the dignity and the potential decency of men, that which makes us speak of the value of the individual man—these are the basis of the entire theory of our profession. It is because we have beliefs that we are a profession. For I take it that profession means belief—belief that a form of life can be devised as the result of which there is rendered to other men, service.—Alfred E. Cohn: Remarks on Professions in Medicine, Science, 92:66 (July 26) 1940.

A MESSAGE TO THE DOCTORS FROM THE WOMAN'S AUXILIARY

Dear Doctor:

Please read this, and take the JOURNAL home to your wife.

Why does your wife not belong to the Medical Auxiliary of your county, or to the Auxiliary to the Medical Society of the State of North Carolina? She is entitled to membership.

Article III from the By-Laws of the Auxiliary to the Medical Society of the State of North Carolina reads: "Membership in the Auxiliary shall be composed of the wives and widows of members of the State Medical Society."

What do you suppose would happen should each present member of the State Medical Auxiliary urge a friend, entitled to membership, to come to the State meeting in May at Pinehurst and become a member? The more the merrier!

Dr. Roy W. Fouts of Omaha, Nebraska, vice-speaker of the House of Delegates of the American Medical Association, in his article "The Doctors' Auxiliary", gives us as doctors' wives a challenge: "We, as help-mates to the Men of Medicine. American Mothers! Wives of American Doctors! We challenge you! In you, we recognize the sanctuaries wherein repose the future Medical Profession. Into your outstretched arms has been, and will be, placed many of the future citizens of our country. Your thoughts and ideals will be reflected in the lives of your sons."

Dr. Fouts in his article urges our thorough reading and application of the lay magazine which our State Auxiliary highly endorses: "*Hygeia*, the lay magazine which is one of the greatest advocates of Preventive Medicine. Read it! Recommend it! Apply its teachings and principles until they become an integral part of your lives and the lives of your families. See that it is in the office and home of every physician, and in every public school library in your state. By so doing, you will make an immeasurable contribution to the cause of modern medicine and the solution of many of its perplexing problems."

And in behalf of Mrs. Karl Pace of Greenville, our State *Hygeia* chairman, I suggest that the county auxiliaries ask her about ways for making money. In the past the *Hygeia* commission has helped in building

up our McCain Bed endowment fund. There is a 50 per cent commission for each *Hygeia* subscription sent in through the local auxiliaries. Send your subscription in today and help make your county report better than ever.

Doctor, your wife through her membership in the Auxiliary to the Medical Society of the State of North Carolina pays \$1.00 annual dues. One half of this goes to the projects we support: (1) The upkeep of the McCain Bed at Sanatorium; (2) the upkeep of the Martin L. Stevens Bed at Western Sanatorium; and (3) the Student Loan Fund, which has been permanently adopted as one of our projects.

Will your County Medical Society cooperate with the State Auxiliary and sponsor the organization of an Auxiliary in the county in which you practice? Mrs. Clyde R. Hedrick, State Auxiliary President, Lenoir, or Mrs. C. F. Strosnider, First Vice-President and Chairman of Organization, will gladly give their assistance.

Yours very truly,

(Signed) MRS. ALFRED A. KENT, JR.
Press and Publicity Chairman.

NEW MEMBERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

During January nine new members joined the State Society. They are:

- Dr. James Watson, Raleigh, N. C.
- Dr. Alexander Webb, Raleigh, N. C.
- Dr. W. H. Roper, Sanatorium, N. C.
- Dr. William Schulze, Duke Hospital, Durham, N. C.
- Dr. E. E. Menefee, Jr., Duke Hospital, Durham, N. C.
- Dr. Macdonald Dick, Duke Hospital, Durham, N. C.
- Dr. H. J. Fox, Duke Hospital, Durham, N. C.
- Dr. Susan Coons Dees, Duke Hospital, Durham, N. C.
- Dr. R. B. Lawson, Chapel Hill, N. C.

NEWS NOTES FROM DUKE UNIVERSITY

At the beginning of the winter quarter, there were 239 medical students—66 first year, 65 second year, 65 juniors, and 43 seniors. 140 pupil nurses were enrolled.

Dr. Laurence H. Snyder, Professor of Medical Genetics at Ohio State University School of Medicine, is giving a series of weekly lectures on Medical Genetics in January, February, and March.

At the meeting of the Duke Medical Society on January 14, Dr. Tinsley R. Harrison, newly appointed Professor of Medicine at the Bowman Gray Medical School of Wake Forest College, spoke on "Hypertension." Dr. Wingate Johnson, Professor of Clinical Medicine at the Bowman Gray Medical School of Wake Forest College, discussed the paper.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. Russell L. Holman, Associate Professor of Pathology in the Medical School, has received a substantial research grant from the John and Mary R. Markle Foundation to aid in his studies on the role of hypersensitivity, diet and heavy metal injury in the production of arterial lesions.

Dr. Harold W. Brown, Professor of Public Health, and Dr. Sterling Brackett, Instructor in the School of Public Health, attended the Sixteenth Annual Meeting of the American Society of Parasitologists in Philadelphia on December 30 and 31, 1940, and January 1, 1941. Dr. Brown presented a paper on "The Occurrence of *Diocetophyme renale* in North Carolina", and Dr. Brackett presented a paper entitled "Six New Species of Avian Schistosomes from Wisconsin and Michigan with a Description of the Life Cycle of One of Them, *Gigantobilharzia gyrauli* (Brackett)".

Dr. H. G. Baity, Professor of Sanitary Engineering, and Professor H. B. Gotaas of the School of Public Health, attended the meetings of the American Society of Civil Engineers in New York in January.

Dr. William Fleming, Dr. J. J. Wright, Dr. Harold W. Brown, Dr. J. C. Andrews, Dr. Robert B. Lawson, Dr. D. F. Milam, and Dr. A. W. Makepeace attended the second Conference of the General Nutrition Committee of North Carolina, which was held in Raleigh on January 10, 1941, at the State Laboratory of Hygiene.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

The second annual conference of the North Carolina General Nutrition Committee, held in the auditorium of the State Laboratory of Hygiene, was described by Dr. Carl V. Reynolds, State Health Officer, who presided, as "a grand demonstration of the desire and willingness of cooperating agencies to study the nutritional needs of the people and then to apply that knowledge."

Dr. Wilder, of the National Research Council, announced that there will shortly appear on the market flour designed to conform to the nutritional standards set by the Council. This flour, he said, will be fortified with thiamin and nicotinic acid necessary for building up the system and combating pellagra. Formerly, "in grandfather's day," he said, flour retained 85 per cent of its nutritive value, which gradually has been cut down, in order to meet the demand for "white flour." In other words, he pointed out, flour was de-vitaminized, but the necessary elements are to be restored by manufacturers.

* * *

Mr. John D. Faulkner, engineer of the Typhus Control Unit of the Board of Health's Division of Epidemiology, in a radio address, "Rats and Their Relation to Disease", said: "The majority of cases of endemic typhus fever occur in the southern states, chiefly, in Georgia, Alabama, Texas, Florida, South Carolina, and North Carolina. In the past ten years over 13,000 cases have been reported to the State Board of Health during this period, with the majority of cases occurring in the past four years. It is believed that many more cases, than are reported, actually occur. The disease is quite prevalent throughout the State and has been reported from 63 of our 100 counties."

"Endemic typhus is most prevalent during the late summer and fall months, and the majority of cases occur among people who work in food handling establishments, feed stores, mills or other rat in-

festated buildings. In one community, in North Carolina, there occurred this year over 25 cases among the employees of one establishment.

"At the present time there is no effective vaccine, such as we have for typhoid fever and diphtheria, which will protect us against endemic typhus fever, nor is there any specific treatment for the disease. Therefore, the only effective way of preventing this disease, is by means of strict rat control measures. Unless we begin to apply such measures immediately, endemic typhus fever will continue to increase, and soon will become a major health hazard."

* * *

North Carolina continues to lead the nation in the number of diphtheria cases reported. In the statement for the week ending December 21, furnished health officers by the United States Public Health Service, Dr. Reynolds pointed out, North Carolina was accredited with 28 cases of diphtheria.

"New York, with its 13,379,142, according to the final figures of the 1940 census, reported only 20 cases. . .

"However, there is a brighter side to the picture, when we consider that, during the corresponding week of 1939, we reported 48 cases."

THE THERMAL BELT MEDICAL SOCIETY

The Thermal Belt Medical Society met at the Isothermal Hotel in Rutherfordton on January 23 at 7:00 p.m. After dinner, the following program was presented:

- "Occipito-Posterior"—Dr. W. T. Head.
- "The Role of the Physician in the Treatment of Pyorrhea Alveolaris"—Dr. J. E. Derby.
- "Thyroidectomy"—Dr. Paul McBee.
- "Edema—Cardiac and Renal"—Motion Picture.

BUNCOMBE COUNTY MEDICAL SOCIETY

At the first monthly meeting of the Buncombe County Medical Society, held on January 6, Dr. Arthur C. Ambler delivered his Presidential Address. Following the address, motion pictures on "Allergic Diseases" and "Pneumonia" from the Lederle Film Library were shown. On January 20 a meeting was held to discuss the Asheville Medical Library.

Officers of the society for 1941 are: Arthur C. Ambler, president; Julian A. Moore, vice president; Eugene M. Carr, secretary; and G. Westbrook Murphy, president-elect.

FORSYTH COUNTY MEDICAL SOCIETY

On January 15 the Forsyth County Medical Society, meeting at the Robert E. Lee Hotel in Winston-Salem, heard Dr. Tinsley R. Harrison, recently appointed Professor of Medicine in the Bowman Gray School of Medicine of Wake Forest College, speak on "Pain in the Chest".

GUILFORD COUNTY MEDICAL SOCIETY

The Guilford County Medical Society met in Greensboro on January 2 at 6:30 p.m. at the King Cotton Hotel. The guest speaker was Dr. Arthur M. Shipley, Head of the Department of Surgery of the University of Maryland, who spoke on "Traumatic Surgery".

MECKLENBURG COUNTY MEDICAL SOCIETY

At the first monthly meeting of the Mecklenburg County Medical Society, held on January 7, Dr. Andrew B. Taylor spoke on the "Early Diagnosis and Management of Peripheral Vascular Diseases". Following this talk a movie demonstration of the modern management of pneumonia was given, through the courtesy of the Lederle Film Library. At the second January meeting, held on January 21, three papers were given. Dr. A. M. McDonald spoke on "The Use of Testosterone in Dysfunction of Male Genital Organs"; Dr. Raymond Thompson spoke on the "Present Status of Prostatic Surgery"; and Dr. Aubrey Hawes gave a paper on the "Present Day Concept in the Study of Male Sterility".

POST GRADUATE SURGICAL ASSEMBLY

The Post Graduate Surgical Assembly of the Southeastern Surgical Congress will be held in Richmond March 10, 11, and 12, 1941. Among the speakers will be Dr. Parker C. Hardin of Monroe, N. C., and Dr. Byrd C. Willis of Rocky Mount, N. C. Information may be obtained from Dr. B. T. Beasley, 701 Hurt Building, Atlanta, Ga.

REGIONAL MEETING OF AMERICAN ACADEMY OF PEDIATRICS

Region Two of the American Academy of Pediatrics will meet in Richmond, Virginia, on April 24 and 25. All physicians who are interested in pediatrics are cordially invited to attend this meeting.

SOUTH ATLANTIC ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

The South Atlantic Association of Obstetricians and Gynecologists met on February 7 and 8 at the George Washington Hotel in Jacksonville. Among the papers read was one on "Supravaginal and Complete Hysterectomy. A Ten Year Survey", by Dr. Richard L. Pearse of Durham. The following North Carolina physicians discussed papers which were read: R. J. Ruark, Raleigh; Ernest Franklin, Charlotte; W. L. Thomas, Durham; John Burwell, Greensboro; B. C. Nalle, Charlotte; W. Z. Bradford, Charlotte; and E. C. Hamblen, Durham. Dr. Robert A. Ross of Durham is secretary-treasurer of the Association, and Dr. I. M. Procter of Raleigh is a member of the Executive Committee.

NEUROPSYCHIATRIC SOCIETY OF VIRGINIA

The winter meeting of the Neuropsychiatric Society of Virginia was held at the Academy of Medicine Auditorium, Richmond, Virginia, at 2 p. m. Wednesday, January 29, 1941.

The following program was presented:

1. "Yeast Infection of the Nervous System"—By Dr. Asa Shield, Richmond, Va.
2. "Mental Deterioration in the Psychoses"—By Dr. Ernest H. Alderman, Richmond, Va.
3. "The Problem of the Psychopathic Personality in the Feeble-minded Institution"—By Dr. G. B. Arnold, Colony, Va.
4. "Suicidal Attempts as Seen in a General Hospital"—By Dr. Patrick H. Drewry, Jr., Richmond, Va.

At the business meeting the following officers for the next year were elected:

President, Dr. W. Gayle Crutchfield, Richmond.
Vice President, Dr. Howard R. Masters, Richmond.
Secretary-Treasurer, Dr. Edward H. Williams, Richmond.

EXAMINATIONS FOR APPOINTMENTS IN THE MEDICAL CORPS OF THE U. S. NAVY

The Surgeon General of the Navy, Rear Admiral Ross T. McIntire, (MC), U. S. N., announces the next examination for appointments as commissioned officers in the Medical Department of the Navy will be held at all of the larger naval hospitals and at the Naval Medical Center, Washington, D. C., on May 12 to 15, inclusive, 1941. Applicants for appointment as Assistant Surgeon, effective approximately two months from date of examinations, may now request authorization to appear for examination. Requests for such authorization should reach the Bureau of Medicine and Surgery prior to April 21, 1941.

Applicants for appointment as Assistant Surgeon are required to be citizens of the United States between the ages of 21 and 31, graduates of Class "A" medical schools, to have had at least one year of intern training in a hospital accredited for intern training by the Council on Medical Education and Hospitals of the American Medical Association, and to meet the physical and other requirements for appointment.

The Medical Corps of the Navy is being increased in strength proportionate to the expanding Navy and U. S. Marine Corps. Service for medical officers is active professionally and attractive in assignments at sea, on shore duty, and on foreign shore stations. In the normal rotation of assignments every practicable consideration is given the officer's preference for the type of duty he desires. The Naval Medical School at the Naval Medical Center, Washington, D. C., offers a course of post-graduate instruction and instruction in those branches of medicine which apply particularly to naval service. Under normal conditions newly appointed officers are assigned to this course upon their entry into the service or during their first few years of naval service.

Naval medical officers are encouraged to develop a specialty after they have completed their first cruise at sea. Shortly before completion of his sea duty, the Navy doctor may request special training in the Medical Department specialty in which he is interested. Such requests are acted upon by a special board in the Bureau of Medicine and Surgery and, if approved, the Navy doctor is sent to a hospital for training and experience in that specialty for one year. Upon completion of this training, he is assigned to post-graduate instruction at one of the many medical centers in the United States for a period up to one year after which, in so far as is practicable, he is retained in that type of duty. Some of the specialties in which qualifications may be obtained are: Surgery; Medicine; Otolaryngology; X-ray; Laboratory; Pathology; Public Health; Psychiatry; Deep-Sea Diving; Aviation Medicine (Flight Surgery); Gas Warfare, and Tropical Medicine. Several officers have been trained in research particularly applying to problems arising in submarine and aviation activities.

The naval service affords excellent opportunities for professional advancement. Medical officers receive the same pay and allowances as other officers of the Navy in corresponding ranks and the equivalent amount of service.

A circular of information for applicants for appointment as medical officers of the Navy, containing full information regarding physical requirements, professional examinations, rates of pay, and promotion and retirement data may be obtained by addressing the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

EXAMINATIONS AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted at Cleveland, Ohio, by the entire Board from Wednesday, May 28, to Monday, June 2, 1941, inclusive, prior to the opening of the annual meeting of the American Medical Association in Cleveland, Ohio.

Application for admission to Group A, Part II, examinations must be on file in the Secretary's Office not later than March 1, 1941.

Formal notice of the time and place of these examinations will be sent each candidate several weeks in advance of the examination dates.

Candidates for reexamination in Part II must make written application to the Secretary's Office before April 15, 1941.

The Board requests that all prospective candidates who plan to submit applications in the near future request and use the new application form which has this year been inaugurated by the Board. The Secretary will be glad to furnish these forms upon request, together with information regarding Board requirements. Address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

THIRTEENTH ANNIVERSARY NUMBER OF THE HAROFÉ HAIVRI

"The Hebrew Medical Journal"

The attention of the medical profession is directed to the appearance of a special issue of *Harofé Haivri* (The Hebrew Medical Journal), a semi-annual publication, edited by Dr. Moses Einhorn. This volume commemorates the thirteenth anniversary of this journal and is dedicated to Prof. Sigmund Freud.

The contents of this Journal are not confined to technical medical topics, but are divided into several sections covering a variety of related subjects, such as Medicine in the Bible and Talmud, Old Hebrew Medical Manuscripts, Palestine and Health, etc. Among the contributors to the medical and editorial sections, have been such prominent physicians as I. S. Wechsler, A. Rongy, S. Solis-Cohen, B. Crohn, R. L. Kahn, J. Bullowa, D. Macht, etc.

For further information, communicate with the editorial office of the *Harofé Haivri*, 983 Park Avenue, New York City.

NEWS NOTES

Two North Carolina physicians were guest speakers at the Twenty-First New Year Meeting and Banquet of the Marlboro County Medical Society, held in Bennettsville, S. C., on January 9. Dr. Brodie C. Nalle of Charlotte spoke on "Prolonged Labor Due to Uterine Dystocia", and Dr. J. Buren Sidbury of Wilmington gave a paper on "Treatment of Diarrhea and Dehydration", illustrated with motion pictures.

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Dr. Aubrey Hawes of Charlotte gave a paper on "Recurrent Urolithiasis" at the Anderson (S. C.) County Medical Society meeting on December 11.

* * *

Dr. Hunter Sweaney of Durham was married to Miss Frances Foushee on December 31.

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Dr. MacLean Bacon Leath, Jr., of High Point, was married to Miss Lillian Agnew of Burkeville, Va.

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Dr. Monroe Gilmour has opened offices at 117 West Seventh Street, Charlotte, for the practice of Internal Medicine.

WOMAN'S AUXILIARY

GREETING TO THE AUXILIARY MEMBERS FROM YOUR PRESIDENT

Let us resolve to renew our interest in Auxiliary work for 1941. Our first effort should be to collect the dues of all members and to secure as many new members as possible. To the District Councillors I would like for each one to resolve to organize one county not now organized. May we have all our dues in Mrs. E. C. Judd's hands as soon as possible, and by all means not later than March 15, 1941.

The State Medical Society is encouraging us to organize all counties having no auxiliaries, and it is my hope to add some new ones this year. It is your duty as a doctor's wife to organize a county auxiliary if you do not have one at present in your county. However, the gain in individual memberships rests mostly upon present membership.

Do you know any doctor's wife that has not joined your Auxiliary?

Have you asked her to attend a meeting as your guest?

Do you make a special effort to be friendly to the visiting doctor's wife?

Do you inform your membership chairman of newcomers to your county, so she may call on them and ask them to join?

The increase of the membership of your Auxiliary depends not only on your chairman, but is the responsibility of every one of you; and if you, as an individual, exert yourself, there is no reason why North Carolina should not have a substantial increase this year.

THE BULLETIN

Sending in your subscription to the *Bulletin* of the Woman's Auxiliary to the American Medical Association should be a "must" on your list of "things to do today". Beautifully edited by Mrs. George H. Ewell of Madison, Wisconsin, it is published four times during the year. You will begin with the Fall, 1940, issue to get news and plans of the Auxiliary from "border to border and coast to coast." *Don't miss it!*

Mrs. H. E. Cristenberry, our *Bulletin* chairman, is very anxious that North Carolina meet its quota in subscriptions to the *Bulletin*. Let us in North Carolina become informed of the work and objectives of the Auxiliary through the *Bulletin*. The quota

for North Carolina has been set for 71, and at present only 4 subscriptions have been received. Please send your \$1.00 to Mrs. Ben Kendall, Shelby, and become acquainted with the work that is being done by our National President.

Mrs. McNeill of North Wilkesboro, Chairman of the McCain and Stevens Beds, has just informed the President that both beds are now occupied. The McCain Bed is occupied by Maria Goodwin, student nurse, and the first occupant of the Stevens Bed is Dr. W. G. Byerly, County Health Officer of Caldwell County.

Convention chatter has begun. This year the Woman's Auxiliary to the American Medical Association will hold its annual session June 2-6 in Cleveland, Ohio.

In Memoriam

RICHARD HARRISON SPEIGHT, M. D.

By J. K. Hall, M.D.

Richmond, Virginia

All of us knew Dr. Richard H. Speight, and some of us had known him intimately for a number of years. Although we knew that his health had not been robust for several months we were shocked by the announcement of his death on the evening of July 31, 1940. He had been for a few days a patient in the Clinic with which he was associated, and his life ceased suddenly as he was making ready to return to his home.

Richard Harrison Speight bore in full the name of his father, who was also a physician. Dr. Speight, the elder, was an upright and forceful citizen. He cultivated a large plantation; he ministered skillfully and unselfishly to the sick in an extensive community; and he reared and educated a large family of children and set them a high example in citizenship. The maiden name of his wife was Maggie Powell. Her father was one of the most substantial citizens of an older day of Edgecombe County. Dr. Speight's paternal grandfather was a Methodist minister, the founder of Speight's Chapel, near the ancestral home. Dr. Speight lies side by side with his father and his mother, his paternal grandfather, and several of his brothers in the Chapel's burying ground. It is fitting that they should lie in sleep eternal near the Chapel that had been established by the grandfather and amongst the people whom they had loved and to many of whom they had ministered.

Dr. Richard H. Speight, the younger, looked first upon his father as the minister to the health of his neighbors. He heard first of his grandfather as the pastor of the community. Thought of others and devotion to others was in the air first breathed by him. His father provided not only for his own large household, but also for the many who cultivated his plantation; and he was considerate of the poor and the needy around him. The spirit of the very best that had been in the old ante-bellum life continued to exist and to sweeten life at the old country home in the boyhood days of our friend.

He spent his childhood and his boyhood in a community that still held to the best the old South had cherished—simplicity, honesty, unselfishness, industry, frugality, with keen consciousness of duty to family, to neighbors, to state, to self and to God.

Dr. Speight was prepared by ancestry—he was the descendant of two of the oldest and the best families in the state's history—by family life, by wholesome rearing and by parental example for the practice of medicine. His father and his father's father were each ministers—one to souls, the other to bodies.

Dr. Speight was educated at Oak Ridge Military School, at the University of North Carolina, and at the University of Maryland. From the School of Medicine of the University of Maryland he obtained his medical degree while he was still almost a boy, in 1901. He had been born in Edgecombe in 1879.

By the time he was 23 years of age he was busily engaged in assisting his father in a varied practice spread over a large area in Edgecombe County. After a year or so of such experience Dr. Speight responded to the call of Dr. Isaac M. Taylor to help him in the management of Broadoaks Sanatorium, a private hospital at Morganton, the first one in the state for the treatment of the mentally and the nervously sick. Dr. Speight's temperament and his skill fitted him so well for such difficult work that he was soon called to the medical staff of the great State Hospital at Morganton. We are obliged to believe that that institution never had on its medical staff a physician who more naturally and easily and sympathetically lent himself to ministering to the patients, to the employees, and to many others in the community. In Morganton, both in the State Hospital and in the town, Dr. Speight was much beloved.

But he longed always for life in his old homeland—for the wide rich fields, for the abundant harvests, and for the prosperous and wholesome and happy rural life. He came again to his native Edgecombe and there he labored until he was called into rest eternal. He practiced at the old home, but most of his remaining years were spent professionally in Rocky Mount. Yet he always had a large country practice, both because he loved the country and because the country people loved him. He practiced sometimes alone and sometimes with others. He was one of the founders of Park View Hospital. He had been associated with his brother, the late Dr. J. P. Speight, and also with another brother, Dr. J. Ambler Speight.

In 1917 Dr. Speight was married to Miss Lucile Pruden Jones. The widow and two children, a daughter and a son, survive him. The son, who bears his father's name, is a medical student. Two brothers and two sisters, one of whom is a graduate nurse, also survive him.

Except for a lack of robust health during the past few years, Dr. Richard H. Speight was generously endowed with all those attributes and qualities that have made the family doctor a citizen so useful and so beloved. He was by nature highly intelligent; he was tactful, genial, but dignified and sufficiently aloof; in his days of good health he was unacquainted with fatigue and was untiring in his ministrations. He had an intuitive knowledge of human nature and he possessed keen diagnostic judgment. His patients developed lasting devotion to him and he gave them ever the best that was in him. When Dr. Speight was in sound health, with no cause for concern about himself, no physician ever ministered more joyously nor more acceptably to his people. He was a splendid physician, an upright citizen, a devoted husband and an indulgent father. The medical profession and the civic life of the community have suffered a grievous loss in his death.

BOOK REVIEWS

The Pharmacological Basis of Therapeutics.

By Louis Goodman and Alfred Gilman. Price, \$12.50. Pp. 1325. New York, The Macmillan Company, 1941.

Now and then, though not very often, a book is published which is so brimful of excellence that one wants to stop his own work and spread the good news to all who will listen. It is in this enthusiastic spirit that the present brief review of *The Pharmacological Basis of Therapeutics* is written. *Materia medica*, formerly crammed like dry bran down the poor student's throat, has been deleted in large part from the curriculum, and in its place the pharmacist familiarizes the student with all he needs to know about pharmaceuticals. Pharmacology is sometimes well taught, more often not; but in either case it is rare to have pharmacology and clinical therapeutics taught simultaneously—a form of teaching which common sense tells us is highly desirable and, indeed, necessary if the student is to become a decent therapist.

It is this ideal method which Goodman and Gilman adopt, and one has only to read a few chapters to find himself in the midst of highly instructive and thoroughly entertaining surroundings. Let the reader turn to the chapter on "Barbiturates", for example, or to the pages devoted to the sulfonamide drugs, and he will, I think, join the host of admirers which this profound and perspicuous treatise is sure to create. The book will be a boon to the medical student, but it should find its greatest usefulness in the hands of the practicing physician, whom it will guide with clearness and certainty in the intelligent use of drugs. It is as necessary for the practitioner as a stethoscope, and it should find a place in the library of every therapist.

Immunity. Principles and Application in Medicine and Public Health. Fifth Edition of Resistance to Infectious Diseases.

By Hans Zinsser, M.D.; John F. Enders, Ph.D.; and LeRoy D. Fothergill, M.D. Price, \$6.50. New York: The Macmillan Company, 1939.

The principle purpose of this present volume is to meet the need for increased correlation between the principles revealed in the laboratory and their applications to the problems of the clinic and of public health. Immunology is no longer regarded by the medical profession as a highly specialized branch of biology with which the practitioner has little concern. The physician of the present day insists on understanding the principles of the procedures which are developed by the specialists and uses critical judgment in the valuation of such methods in his own work. The book is divided into two sections, the first covering principles and theory, and the second on the application of immunological knowledge to medicine and public health. In this section, immunologic methods for diagnosis, specific therapy and the production of immunity for a large number of infectious diseases are presented in great detail. The volume contains the answers to a large number of questions frequently asked by the general practitioner and should be in the hands of both laboratory workers and practitioners. The book is well written and the section on applied immunology is unusually practical.

A Surgeon's Life. By John M. T. Finney, M.D. Cloth. Price, \$3.50. Pp. 396. New York. G. P. Putnam's Sons, 1940.

Dr. John M. T. Finney has entitled his autobiography "A Surgeon's Life", and he might well have added, "Or the Family Doctor Becomes a Surgeon"; for despite the surgical specialization, his simple, kindly nature and his love of personal service to his patients mark him indelibly as the family doctor. Through the pages of his book shines forth the stature of a real man, careless of money, contemptuous of sham and pretense, incapable of that strutting arrogance which lesser men so easily develop, and above all, an honest, humble, hardworking doctor. His life story is a plain, unvarnished tale, and one may say without intended derogation that the man is far greater than his book.

Not that the book lacks merit, for its simple, direct style is often strangely moving and, although it is essentially a happy, sunny story, the reader will now and then surreptitiously wipe away a tear. Dr. Finney is as Southern as corn pone and hot biscuits, and like most Southerners of the better class, he is genuinely fond of the negro and sympathetic with his problems—not in the soppy, sentimental fashion so often affected by those who know nothing of "negroes", but in the nostalgic way of the Southerner who was nursed by one, played with "niggers" as a child, ate their cooking with the relish due the best cooking in the world, and who respects them for what they really are. Dr. Finney speaks correctly and with understanding the language of the untutored Southern dinky, and his book contains many good negro stories.

As a surgeon, Dr. Finney defines himself quite objectively and honestly. His accomplishments have been in the field of the practical, for he never cared for research or the laboratory. He belongs to the group of sturdy surgical pioneers who have so broadened the scope of surgery and so improved its practical technique that today no nook or cranny of the body may be called inaccessible. He is no Harvey Cushing, nor has he ever desired to be; when offered Halsted's chair of surgery, he assessed his attainments with stark honesty and refused it.

There is a certain type of man to whom one turns instinctively when a public service is demanded. Dr. Finney has served on so many committees and boards of trustees that he could not possibly remember them all. In his modest way he names many of these, but there were surely more. His life has been spent among men who were either great or who thought they were, but he never lost the common touch for a single instant. Some of these contacts make most interesting reading—as, for example, his experiences when General Pershing sent him from his headquarters in France to carry a message directly to President Wilson; he delivered the message and it produced the desired result. He went to France a major and returned a Brigadier General. Writing from France in 1918 he said: "I can conceive of no greater calamity that could befall the world than the triumph of the German arms, and the forcing upon it of the standards of morality and justice of their ruling classes." If this could be said of the Germany of 1918, what can one say today when Hitler and his willing

slaves have left their slimy traces upon the whole of Europe!

Although the book is replete with doctors' talk and anecdotes that will delight the reader, whether medical or lay, to many the personal recollections of his famous colleagues will make the strongest appeal. Welch, Osler, Halsted, Kelly, Thayer, Fletcher, Boggs—what memories these names awaken in one who knew them as teachers, and hence as friends! They gave to American Medicine that priceless something known as the "Hopkins Spirit". It would be quite wrong to insinuate that flashes of this same spirit had not appeared before in Philadelphia, in Boston, in New York and elsewhere, but it came to its full flower in Baltimore. There is no need to define it; one who has been exposed to it needs no definition, and one who has not might consider such an attempt presumptuous if not offensive. We may all be proud that today no one school or group can be singled out as peculiarly possessing this spirit. It has so diffused itself that it has become the spirit of American Medicine. Dr. Finney dwells with loving memory upon these lost colleagues whose lives he sketches with that clearness and perspicuity which Macaulay said was the true eloquence of science. He and Kelly are the last leaves on the bough. We put down his book with the renewed conviction that he represents in its truest sense the Good Physician.

How Jesus Heals Our Minds Today. By David Seabury. Pp. 317. Price \$2.50. Boston: Little, Brown and Company. 1940.

This is one of the most intriguing and stimulating books that have appeared recently. Its author, a distinguished psychologist, shows by numerous direct quotations how the teachings of Jesus anticipated those of modern psychology—and how modern psychology derives its fundamental conceptions from Christ. Perhaps an extreme fundamentalist might find fault with some of Dr. Seabury's conclusions, but this reviewer is ready to accept most of his reasoning. In a few instances he comes dangerously close to faith healing. Here his views are identical with those expressed by Alexis Carrell in *Man, the Unknown*. Seabury quotes freely from Carrell and was evidently much influenced by his views. With this exception, the book can be commended to all physicians and intelligent laymen interested in the healing of the mind.

A few quotations will illustrate the character of the book. "From experience in psychological work, if I were asked what one factor causes most of our suffering, I would certainly say the delusion of duty. Nothing else causes so much neurosis, insanity and disease . . . Around us people are rushing about, pushing, crowding, sweating in the name of duty."

"Every sort of madness has been perpetuated in the name of conscience." "The average conscience is made up of family opinions, neighborhood prejudices, social biases and the superstitions and delusions of a particular time and place."

"Millions of people today, in so-called Christian lands, know little of the teachings of Jesus."

"There is joy in a task well done, security in an ever-maturing mind, confidence in an intellect that thinks with accuracy, strength in a heart full of courage, glory in the adventure of creative living."

"We urge the rediscovery of Jesus as the only enduring cure for our personal dilemmas and our social problems."

Introduction to Medical Biometry and Statistics. By Raymond Pearl, Professor of Biology in the School of Hygiene and Public Health, and in the Medical School, The Johns Hopkins University. Third edition, revised and enlarged. 537 pages. Twenty-eight chapters. Ten appendices. Philadelphia: W. B. Saunders Company, 1940.

This is the third revision of this book. The second revision was in 1930. This book was originally written to be used as an introduction to biometric methods for biologists and medical men, and was not intended to be particularly valuable for specialists in the field. It serves as a grounding in the elementary principles. The present revision follows the original plan. Much new material, many new illustrations and tables have been added, and large portions of the text have been re-written. The chapters on tabular and graphic presentation of statistical data and on obtaining original scientific records will well repay careful reading by the great majority of medical men who have tabular material to present in a paper. A short section on the common failings of medical records is particularly pertinent.

The Need for the General Practitioner.—I am thoroughly convinced that most of the mistakes in diagnosis, and therefore most of the mistakes in therapy are due, not to lack of knowledge, but to failure to listen to the story of the patient, failure to make a simple inclusive physical examination, and failure to think about the data thus acquired. There is a great need for men of broad minds and wide knowledge to whom people may come when first ill, assured of a careful inquiry into their symptoms, and a general evaluation of their physical condition with recommendations for special minute examinations of parts of their bodies when indicated, to the end that no early cancer, no tuberculous focus, or other progressive lesion be overlooked. In other words, there is a great need for the man or woman who in the cities is called an "internist" and in the small communities is called a general practitioner of medicine. This man is the first line of defense against the onslaught of disease and the first line is very often the most important. —Warner S. Bump: *Medical Opportunities in a Small Urban Community*, *Wisconsin Medical Journal*, 39:976 (November) 1940.

Health Standards in America. — The health in America has never been better than it has been during the last ten years, in spite of the depression. It is a peculiar thing that when everything else has gone down—finances, the promises of politicians, economic control, and social good will—when everything else has been in a panic and depression for ten years, one thing has been going up—the health of the American people. Who gets credit for it—the foreign isms abroad, those along the Atlantic seaboard that would like to implant still more foreign isms in this country, or the rank and file of the family doctors directly on the firing line with their patients? It has been that sacred relationship of doctor and patient that has elevated the health standards of this particular country, and we are giving at the same time due credit to the municipal and state health departments, as well as the United States Public Health Service.—Eben J. Carey: *The Doctor and Democracy*, *Wisconsin Medical Journal*, 39:918 (November) 1940.

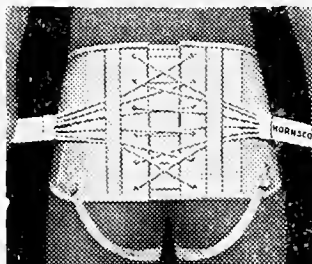
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UTEROPLACENTAL APOPLEXY

Report of Three Cases

JAMES PATRICK HENNESSY, M.D., F.A.C.S.

NEW YORK CITY

Rigby⁽¹⁾, in 1775, first called our attention to the condition of premature separation of the normally implanted placenta and gave it the name of *accidental hemorrhage*, to distinguish it from the other chief cause of bleeding in the last trimester of pregnancy—namely, placenta previa. Rudolph Holmes⁽²⁾, in 1901, further emphasized the frequency and clinical importance of this complication and suggested the name *ablatio placentae*. De Lee⁽³⁾ gave the term *abruptio placentae* to those cases in which the placenta is partially or wholly separated from the uterine wall before delivery.

The term *uteroplacental apoplexy* was first used by Couvelaire as a designation of that serious obstetrical complication in which there are marked changes in the uterine wall as a result of extensive detachment of a normally implanted placenta, with a tendency of the hemorrhagic process to reach its maximum under the peritoneum. In 1911⁽⁴⁾ and again in 1912⁽⁵⁾ he described serious cases of *abruptio placentae* and called the condition "apoplexie utero-placentaire". He compared the appearance of the uterus

to that of an ovarian cyst with a twisted pedicle. The surface was congested and brownish, with ecchymoses extending out on to the ovaries and broad ligaments. The uterine muscle was degenerated and infiltrated with blood. Petechiae of various sizes, some of them ruptured, were present beneath the peritoneum, and the serosa was split in places, allowing blood to escape into the uterine cavity. These findings indicate a toxemic causation of the primary rupture of the blood vessels, followed by detachment of the placenta. The bloody extravasations between the muscle fibers would explain the postpartum atony of such a uterus.

The apoplexy of Couvelaire presents a picture so typical as to be almost pathognomonic. It differs so widely from all other examples of *ablatio placentae* that it is generally considered to be in a class by itself. The subperitoneal hemorrhages are widely diffused throughout the uterus, appearing as reddish black stains of various sizes, single or multiple, and forming large blotches extending unevenly in all directions and so confluent that the entire organ is blanketed in hemic effusions. The discoloration is most marked in the area over the placental site. The tissues adjacent to the uterus—the pelvic and parietal peritoneum, broad and round ligaments, tubes and ovaries—usually participate in the picture. The extravasated blood rarely develops into a hematoma. The evidences of the hemorrhage are indicative of the saturation of the wall itself.

One strange feature of this condition is the relatively small amount of bleeding on uterine incision for a cesarean section; in

Read before the Seaboard Medical Association of Virginia and North Carolina, at Washington, N. C., December 5, 1940.

1. Rigby, Edward: *An Essay on the Uterine Haemorrhage*, London, J. Johnson, 1775.
2. Holmes, R. W.: *Ablatio Placentae: A Study Based upon 200 Cases in the Literature*, *Am. J. Obst.* 44:753-784, 1901.
3. DeLee, J. B.: *Principles and Practice of Obstetrics*, ed. 7, Philadelphia, W. B. Saunders, 1938.
4. Couvelaire, A.: *Traitement chirurgical des hemorrhagies utero-placentaire avec decollement du placenta normale-ment insere*, *Ann. de gynec. et d'obst.* 2. ser. 8:391-608, 1911.
5. Couvelaire, A.: *Deux nouvelles observations d'apoplexie utero-placentaire*, *Ibid.* 2. ser. 9:486-495, 1912.

one of our reported cases there was practically none. This absence of undue bleeding has not been explained. It may be that a toxic substance first produces a permeability of the uterine vessels with extravasation on or about the time of placental separation, and that, as a result, there is an arrest of bleeding. The hemorrhage of toxic apoplexy is not so profuse as that in other types of ablation, and postpartum hemorrhage is exceptional.

The clinical course gives no hint of the presence of a Couvelaire apoplexy other than intensity of symptoms; the condition can be identified only by inspection and palpation in the course of a cesarean section.

Uteroplacental apoplexy is not of frequent occurrence. Davis and McGee⁽⁶⁾ reported 164 cases of abruptio placentae in 40,000 deliveries at the Chicago Lying-In Hospital, and 15 of these had the typical Couvelaire uterus. Harrar⁽⁷⁾, at the New York Lying-In Hospital, found only one case of Couvelaire uterus in 100,000 deliveries. In the majority of cases there was no definite clinical evidence of toxemia.

Etiology

There are many possible causes of uteroplacental apoplexy; among them may be included toxemia, trauma, torsion of the uterus, degeneration and inflammatory lesions of the decidua, and vascular disease. It has been shown⁽⁸⁾ that there is a definite relationship between hyperprolauria and pathologic conditions in pregnancy. Next to that in hydatid mole, the greatest output of prolactin in the urine is to be found in cases of abruptio placentae, especially in uteroplacental apoplexy. In eclampsia, also, there is an increase of prolactin in the blood, cerebrospinal fluid, and placenta, and this is also true in hyperemesis and toxemia during the early months of pregnancy. It is possible that the body may be able to dispose of these excess amounts through the urine and the cerebrospinal fluid, but retention of excess results in hydatid mole, abortion or abruptio placentae. The cause of the premature separation of the placenta, and especially of uteroplacental apoplexy, may be a disturbance in the hormonal relationship between

the placenta and the corpus luteum. Accidental hemorrhage is more likely to occur in all of these complications, but it is difficult to prove that any one of them is the constant etiological factor.

Pathology

Uteroplacental apoplexy, first described by Couvelaire, and extensively studied by Essen-Moeller⁽⁹⁾ and Williams, presents a characteristic pathologic picture. Although its exact etiology is unknown, the pathologic findings favor a toxic origin. *Macroscopically*, the uterus, tubes, ovaries, and often the broad ligaments present a bluish, purplish, mottled appearance. This characteristic discoloration may, in fatal cases, extend to the entire peritoneum lining the pelvis and lower abdomen. Sometimes the peritoneal cavity contains dark free blood which has oozed through the fimbriated ends of the tubes or through tears in the serosal surface of the uterus and adnexa. The uterus has lost the power of contraction and is flabby and stretched. The cut surface is wet and presents a bluish or purplish appearance most marked in the inner and outer layers of the uterine wall. *Microscopically* there is found an extensive intramuscular hemorrhage, infiltrating the muscle bundles and so dissociating the muscle fibers that they lose their integrity and their contractile power. The process is most marked in the inner and outer layers of the uterine wall, but the hemorrhagic extravasations may extend to the adnexa, the broad ligaments, and the retroperitoneal space. The muscle tissue shows, in places, a marked edema. In advanced cases this seems to be more than a simple edema; apparently there is an actual solution of much of the cytoplasm of the muscle cells. Many of the small vessels show a definite increase in the size and number of the endothelial cells lining their walls. The nuclei often appear swollen and hydropic; the cytoplasm is rounded and vacuolated. A severe degree of arteriosclerosis may be noted in the large vessels. The intima of each vessel is thick to the point of obliterating the lumen. Vacuoles are present, and hemorrhage is visible in the intima of the center vessel.

Symptoms

Abdominal Pain. In some cases the onset is sudden, with severe excruciating pain.

6. Davis, M. E. and McGee, W. B.: *Abruptio placentae*, Surg., Gynec. and Obst. 53:768-779, 1931.

7. Harrar, J. A.: *Accidental Hemorrhage: 254 Cases in 100,000 Confinements at the New York Lying-In Hospital*, Bull. Lying-In Hosp., N. Y. 11:151-157, 1917.

8. Heim, K.: *Zur Pathogenese der vorzeitigen Loesung der Plazenta*, Monatsschr. f. Geburtsh. u. Gynak. 104:1-22, 1936.

9. Essen-Moeller, E.: *L'hémorragie retro-placentaire*, Arch. mens. d'obst. et de gynec. 4:145-169, 1913.

usually continuous and colicky, in the lower abdomen. In others, there is first a dull ache which later becomes continuous and colicky. The pain may grow progressively worse, and, as labor sets in, the symptoms may be altered. Abdominal discomfort is associated with the accumulation of blood in the uterus. The rapid distention of the uterus causes stretching of the peritoneum and intense pain.

Hemorrhage. In partial separation of the placenta bleeding may be either concealed or external. In the former type, the bleeding either occurs behind the placenta or is concealed in the uterine cavity by the presenting parts or by the free placenta acting as a tampon for the lower uterine segment. As the case progresses, there will be external bleeding with expulsion of clots. Early recognition of bleeding in the uterine cavity is important, since it indicates a serious condition with danger of exsanguination. This is apparent in cases of uteroplacental apoplexy, where the blood not only accumulates in the uterine cavity but extravasates and infiltrates into the uterine musculature, underneath the serosa, between the leaves of the broad ligaments, and retroperitoneally. It is believed that some alteration of the blood vessel walls accounts for this extravasation of blood. The systemic signs of hemorrhage soon develop: anemia, high pulse rate, lowered blood pressure, and cold and clammy skin. The patient complains of thirst, faintness, dizziness and exhaustion. The shock is most marked in uteroplacental apoplexy and may be due either to irritation of the peritoneum by the hemorrhage beneath it or to an unidentified toxin.

Uterine Tenderness. In complete separation of the placenta there is a more or less board-like rigidity of the uterus which is pathognomonic. Tenderness is almost always associated with such rigidity and may be elicited over the entire uterus so that the gentlest palpation is very painful. This is especially true in uteroplacental apoplexy. The board-like rigidity is due to a tetanic contraction of the musculature, the uterus having no periods of relaxation. This tetanic contraction causes constant tenderness and pain, but does not advance labor by effacing and dilating the cervix, although rhythmic contractions are more severe than in normal cases. There is a paralysis of the uterine

musculature as a result of infiltration of blood within its walls.

Changes in the Uterus. In the concealed type of hemorrhage the accumulation of blood within its cavity gradually enlarges the uterus. The fundus is higher than would be indicated by the estimated duration of pregnancy. Increase in the size of the uterus during the period of observation is a valuable diagnostic sign. As the uterus grows larger, fetal movements can no longer be seen or felt; it becomes difficult to outline the fetus, the fetal heart is not audible, and the child dies, asphyxiated by a failing blood supply.

Diagnosis

Complete separation of the placenta can be diagnosed by the appearance of external hemorrhage in the last trimester of pregnancy, associated with moderate or severe abdominal pain. A gradual increase in the size of the uterus and a change in its contour may indicate a concealed hemorrhage. Marked uterine tenderness extending laterally over the region of the broad ligaments usually signifies uteroplacental apoplexy. Painless bleeding in the last trimester is readily diagnosed as placenta previa; in this case the cervix is effaced to some extent and the placenta can be palpated.

Prognosis

Premature separation of the placenta, in its more serious phases, is probably the most dangerous complication of pregnancy. It is safe to say that complete separation is fatal to from 25 per cent to 50 per cent of the mothers and to 95 per cent of the babies, regardless of the kind of treatment employed. In partial detachment, skillful treatment will save a larger proportion. Early diagnosis and immediate institution of treatment are probably the most important factors in saving the lives of both mothers and children.

Case Reports

Case 1. Mrs. M. McH., Para II, Gravida III, aged 32 years, married three years, was admitted to St. Ann's Maternity Hospital by ambulance at 11:30 p. m. on January 22, 1936. Her family and personal history were negative. Menstruation began at the age of fourteen and periods were regular, every twenty-eight days, lasting five days, and

with no dysmenorrhea. She had had two spontaneous abortions, the first at sixteen weeks and the second at nine weeks. Her last period was April 24, 1935; life was felt August 27, 1935; the estimated date of confinement was January 29, 1936.

Physical examination revealed a well developed female, weighing 160 pounds, 5 feet, 5 inches tall. Except for a faint systolic murmur at the apex and moderate edema of the ankles general examination was negative. Wassermann and urine tests were also negative.

At six o'clock on the evening of her admission to the hospital she complained of sudden colicky pain in the lower abdomen which gradually increased in severity until it became continuous, with no relief. There was no bleeding.

Examination revealed a large, tense, rigid uterus, filling the abdomen. Tenderness extended out to the sides and was so marked that palpation was painful. The fetal heart was not audible. The cervix was long, fairly soft and patulous, barely admitting the tip of the finger. The blood pressure was 108 systolic, 68 diastolic; the pulse 112. As her condition was poor, her blood was typed and found to be type 11; 500 cc. of citrated blood was given by transfusion. She responded fairly well and slept for about an hour. Slight vaginal bleeding was then noted and the severe colicky pain began with renewed vigor.

The diagnosis of ablatio placentae being established, the patient was prepared for immediate laparotomy. Under nitrous oxide-ether anesthesia the abdomen was opened, exposing a large, tense, rigid uterus, of a brownish color, markedly injected, with petechiae of various sizes scattered here and there. The serosa was split in places, allowing blood to ooze. The infiltration of blood in the uterine wall had extended to the tubes, ovaries and broad ligaments; there were a few ounces of blood serum in the cul-de-sac. A hurried cesarean resulted in the delivery of a dead baby weighing 7 pounds, 2 ounces; this was followed by a supracervical hysterectomy by the clamp method. As there was more evidence of shock, another transfusion was started, but the patient failed to rally and died just as the skin edges were being approximated.

Pathological Report. The whole uterus measured 8x16 inches and was thick walled, with a rough shaggy endometrial surface.



Fig. 1 (case 1), showing widespread hemorrhage into the uterine muscle. The muscle bundles are spread wide.

On section, the wall was found to be riddled by blood.

Microscopical Description. The outstanding change was the widespread hemorrhage into the uterine muscle. The muscle bundles were spread wide and contorted by extravasated red cells. Beneath the serosa the contorted muscle bundles were visible. Beneath the decidua the muscle and collagen were quite often non-nucleated, and the decidual tissue had undergone degenerative changes; in some folds complete loss of nuclei pointed to tissue death. Several of the smaller vessels of the uterine wall showed a peculiar change in their subintimal tissue. The endothelium of the vessels was intact; the layered muscle normally surrounding the vessels had retracted or had been pulled away from the subintimal tissue through one-half of their circumference, leaving in its place a fine reticulum poor in nuclei. The change placed the lumen of the vessel eccentrically in the muscle coat.

Pathological Diagnosis. Widespread hemorrhage into the uterine muscle.

Case 2. Mrs. A. B., a primipara, aged 27 years, married two years, was seen in consultation at the Physicians Hospital, Jackson Heights, Long Island, on May 12, 1938, at 3 p. m. Pain in the abdomen had begun at 2 a. m., and was at first moderate and regu-

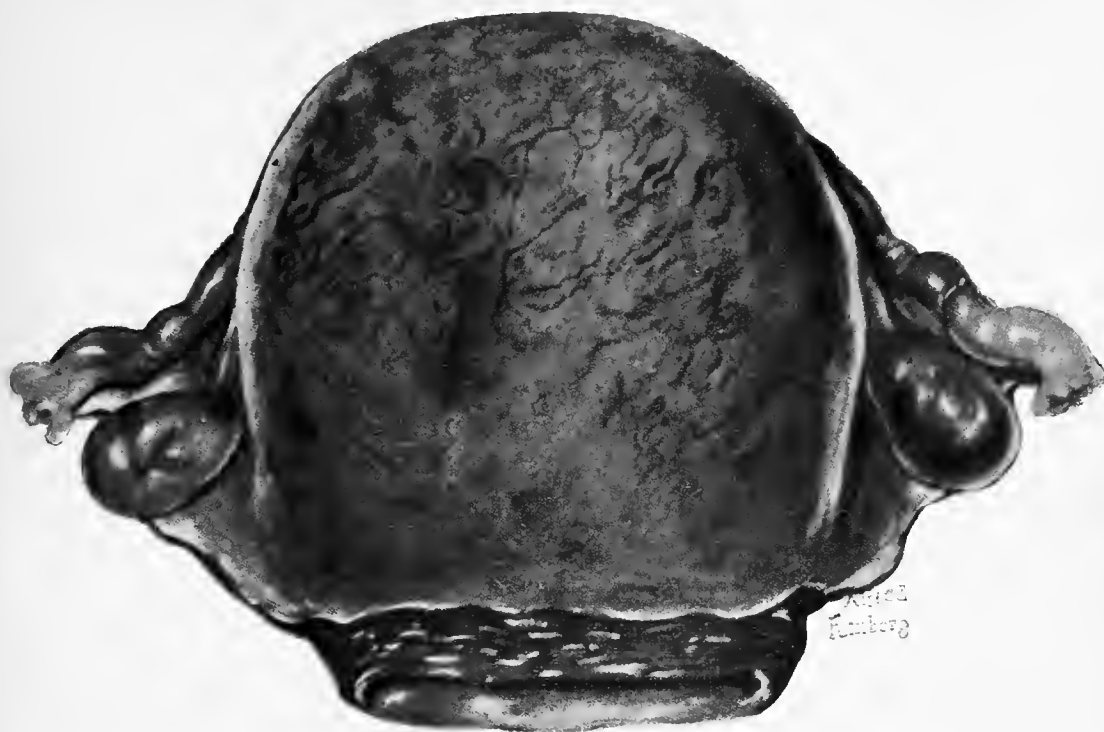


Fig. 2. (Case 3). Posterior surface of the uterus, showing the extensive apoplectic involvement.

lar, later becoming colicky and almost continuous. Vaginal bleeding had begun at 3 a. m. and had continued until the time she was seen. There was some dyspnea and a feeling as if the abdomen was growing larger.

Her history showed that menstruation had begun at the age of fourteen; periods occurred every twenty-eight days and lasted four or five days and were moderate in amount, with no dysmenorrhea. The last period was August 20, 1937; the estimated date of confinement was May 27, 1938. There was no history of toxemia or trauma. Wassermann and urine tests were negative.

Examination revealed the uterus (fundus) at the ensiform, larger than a full term pregnancy, tense, and ligneous in consistency. The fetal parts could not be palpated and the fetal heart sounds could not be heard. A very careful vaginal examination with mercurochrome instillations revealed a long thick cervix which barely admitted the tip of the finger. There was moderate bleeding. As the patient showed signs of shock, a transfusion of 750 cc. of citrated blood was given, after which she seemed a little more comfortable.

She was prepared for a laparotomy and

under gas-oxygen-ether anesthesia the abdomen was opened. The uterus was found to be somewhat edematous, tense on palpation, purplish in color and somewhat friable. This was especially true of the anterior wall and much less so of the posterior wall. A mid-line incision was made and a dead female fetus, weighing 7 pounds, 6 ounces, was delivered by podalic extraction. Since the uterus, although soft and flabby, showed signs of contracting slowly, it was wrapped in hot saline pads and gently massaged for thirty minutes. The color improved, the tone became better, and it contracted fairly well. It was then packed with wide iodoform gauze packing and the wound was closed in three layers. Another transfusion of 500 cc. citrated blood was given and the patient was returned to her room in fairly good condition. After a stormy period of seven days, she finally made a good recovery and was discharged from the hospital at the end of twenty-one days. She has since been delivered of a seven pound female child by cesarean section. The scar of the previous section was found at that time to be smooth, firm and strong.

Case 3. A primipara, aged 15 years, was seen five times in the clinic, and was admitted to the Misericordia Hospital on June 30, 1940 at 3:30 p. m., complaining of colicky abdominal pain and moderate vaginal bleed-

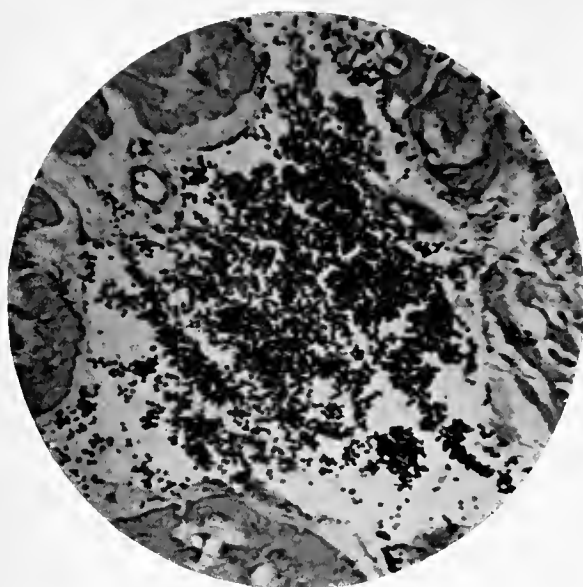


Fig. 3. (Case 3). H & E section. Low power. The photograph shows a marked hemorrhage into the connective tissue between bundles of muscle fibres.

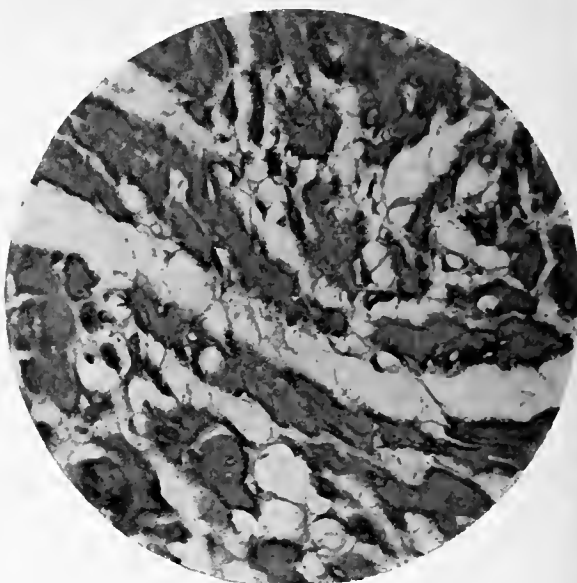


Fig. 4. (Case 3). H & E section. Low power. This is a photograph of the myometrial fibres. Note that the cells are swollen, present a smudgy appearance, are vacuolated and contain no nuclei. Edema is present, as can be seen from the separation of the muscle cells.

ing which had started three hours earlier. At first the pains were slight, but they gradually became more severe, recurring every four minutes.

The patient's family history was negative; her personal history included measles and chicken pox. Menstruation began at the age of twelve; periods occurred every twenty-eight days and lasted four or five days; there was no dysmenorrhea. The last period was November 1, 1939; estimated date of confinement was August 8, 1940.

Her blood pressure had ranged from 110/75 to 124/76. Her prenatal course had been normal. Wassermann and urine tests were negative. Examination revealed a uterus the size of a full term pregnancy, symmetrical in outline, tense, ligneous in consistency. The fetal parts could not be satisfactorily palpated and the fetal heart sounds were inaudible. A very careful vaginal examination with mercurochrome instillation showed a long, slightly softened, patulous cervix, barely admitting the tip of the finger. The patient showed definite signs of shock and her blood pressure was 85 systolic, 50 diastolic. She was given 550 cc. of citrated blood by transfusion and one-sixth grain of morphine sulfate, after which she rested for about an hour and the blood pressure rose to 110 systolic, 70 diastolic.

A diagnosis of ablatio placentae was made and she was prepared for a laparotomy. Under nitrous oxide-ether anesthesia the abdominal cavity was opened through a median suprapubic incision. The uterus was edematous, ecchymotic, mottled and purplish in color, with petechiae of various sizes scattered under the peritoneum. Some of these had ruptured, exuding serum. The area of infiltration and edema extended from the cervix to the fundus on both the anterior and posterior walls, to the tubes, ovaries, and broad ligaments. There were a few ounces of free blood serum in the pelvic cavity.

On opening the uterus in the midline, the placenta was found to be completely separated, with a large amount of old clotted blood between it and the uterine wall. A minimal amount of bleeding was noted on incision. A dead female fetus weighing 5½ pounds was delivered with the placenta *en masse*. Immediately following delivery the uterus was observed for fifteen minutes; the muscles remained flabby and showed no tendency to contract. Therefore a supra-cervical hysterectomy with removal of the tubes and ovaries was performed by the clamp method. The patient was given another

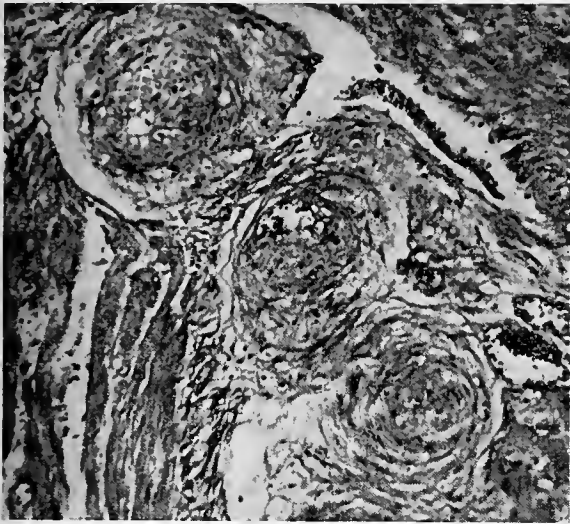


Fig. 5. (Case 3). H & E section. Low power. Note the severe degree of arteriosclerosis. The intima of each vessel is thick to the point of obliterating the lumen. Vacuoles are present, and in the center vessel hemorrhage can be seen in the intima.

transfusion of 450 cc. of whole blood and was returned to her bed in good condition. The blood pressure was 130 systolic, 70 diastolic, and the pulse 105. After the third day she had an uneventful convalescence and was discharged from the hospital on the sixteenth day. She was seen on October 18, 1940, at which time she stated that she felt very well, had married, put on weight, and had no menopausal symptoms.

Pathological Report. Representative blocks, cut from various portions of the uterus, showed the same changes in all. Conspicuous among these was the presence of fresh hemorrhages of varying size both in the serosa and throughout the myometrium, chiefly in the loose edematous fibrous tissue surrounding muscle bundles. There was no accompanying white blood cell infiltration. The smooth muscle fibers exhibited abundant evidence of degeneration: their outlines were indistinct; they appeared swollen, and stained unevenly, some dark, others very light. Many cells were fragmented, others vacuolated. In many the nuclei appeared to be absent and, where present, they stained poorly and were swollen. Many contained a large vacuole which displaced the chromatin peripherally and compressed it against the nuclear membrane. The sinusoids and veins within the myometrium were widely dilated and filled with blood. A slight dis-

tance beneath the endometrium a medium sized artery was found which was tortuous and markedly thickened. The thickening was entirely intimal, caused by endothelial proliferation and fibrosis, and so marked that in several sections of the vessel no lumen was visible. In another section a hemorrhage was visible in the thickened intima. In a second slide, showing a similarly changed vessel, large fat vacuoles displaced the endothelium and further narrowed the lumen.

Treatment

One rule governs the management of all cases of separation of the placenta: delivery must be effected at the earliest possible moment and with the least possible loss of blood. When the separation occurs at or immediately before the onset of labor, when the cervix is uneffaced and undilated, hysterotomy should be performed, regardless of the condition of the child. Whether the infant be living or dead, the uterine blood spaces will continue to pour their contents into the uterine cavity, and the presence of the fetus prevents contraction of the uterus. Immediate cesarean section is the procedure of choice, especially when uteroplacental apoplexy is suspected.

Whether hysterectomy will be necessary depends upon the ability of the uterus to contract and control the bleeding⁽¹⁰⁾. In severe uteroplacental apoplexy the uterus is soft and boggy because of the profuse infiltration of blood between the muscle bundles and is thus incapable of contraction. It is then most liable to infection and necrosis. This is known as the Couvelaire uterus; it is a dead organ and should be removed as a matter of routine. Whenever there is any doubt the uterus should be sacrificed.

The accompanying anemia is treated by blood transfusion, intravenous glucose, and hypodermic saline solutions. Morphine is administered for pain and shock. Patients in shock must be rapidly prepared before surgical intervention. The above mentioned measures will improve the patient's chances for recovery from operation. Frequent use of blood transfusions has marked a definite advancement in the treatment of such hemorrhagic cases.

10. Phaneuf, L. E.: Uteroplacental Apoplexy; Report of Two Cases with a Review of the Literature, Boston M. and S. J. 1923:1037-1046, 1925.

Summary

1. Three cases of uteroplacental apoplexy following premature detachment of the placenta are reported. In one, the separation was almost complete, while in two it was complete and the placenta was free in the uterine cavity. The bulk of the hemorrhage was retained within the uterine cavity. All had internal and external hemorrhage at some time.

2. These patients showed no evidence of toxemia. The results of urine and Wassermann tests were negative. There was no history of trauma.

3. In two cases the uterus was removed because of the extensive infiltration and the failure of the uterus to contract. In one case contractions were fairly strong and the uterus was left *in situ*.

4. Two of the patients were primiparae and one was a multipara. Parity apparently has no part in the causation of this condition.

5. It is not always possible to tell whether the separation is complete or partial. Unless the uterus is inspected at operation or autopsy an accurate diagnosis cannot be made, since there are no characteristic signs denoting the infiltration of the myometrium with blood⁽¹⁾.

6. Reduction of maternal and fetal mortality depends on early hospitalization and the liberal use of prophylactic transfusions. Regardless of the type of placental separation or the method of delivery, excessive loss of blood leads to death, while if blood is conserved many can be saved.

7. Hysterectomy is indicated if the uterus fails to contract and if hemorrhage persists.

11. Irving, F. C.: The Conservative Treatment of Premature Separation of the Normally Implanted Placenta. *Am. J. Obst. and Gynec.* 31:881-889, 1937.

The Clinical Sense.—You may be skilled in the sciences, facile with chemical, physical, biological and many other techniques, you may know the physical manifestations of many diseases, you may contribute to the store of knowledge and be a medical scientist, but you will not be a physician until you have developed what has been called a clinical sense. This is an acquired faculty based subtly but soundly on a broad knowledge, a retentive memory, a discriminating and orderly habit of mind, combined with an understanding of mankind. — Austrian, Charles R., M.D.: *The Care of the Patient*, New England J. Med. 223:695 (October 31) 1940.

STUDIES IN HISTAMINASE

The Effect of Histaminase on the Histamine Wheal

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and

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The mechanism of the wheal and flare as a part of the so-called "triple response" was accurately described by Lewis in 1927⁽¹⁾. The wheal is a localized edema of the upper cutis caused by the escape of fluid from capillary walls normally capable of retaining it. The flare is the result of arteriolar dilatation and is a local nervous reflex. The increased permeability of the endothelial cells of the capillary network which occurs during whealing, as well as the flare, is regarded as a histamine-like effect. Any sort of injury to the skin—mechanical, thermal, chemical, electrical or the interaction of antigen and antibody—may liberate the wheal-and-flare-producing histamine-like or H substance from the cells of the cutis. The "triple response" with characteristic wheal and flare can be produced at will by the intracutaneous injection of histamine phosphate. Urticaria is an allergic disease characterized by the sudden appearance of areas of local swelling of the skin commonly described as wheals. It is believed that this typical lesion in urticaria may also be a histamine effect⁽²⁾.

In 1930 Best and McHenry⁽³⁾ showed that a tissue extract with the properties of an enzyme, called by them histaminase, was capable of neutralizing histamine when incubated with it for twenty-four hours at 37.5 C. The application of this discovery to clinical medicine has already begun and his-

From the Immunology Clinic, Medical College of Virginia.

B. Armistead Shepherd Fellow in Immunology.

The histaminase used in these studies was kindly furnished by the Winthrop Chemical Company and is marketed under the name of Torantil (enteric coated capsules, pills, and powder for solution in diluting fluid for parenteral use.)

1. Lewis, Thomas: *Blood Vessels of the Human Skin and Their Responses*, London, Shaw and Sons, 1927.
2. The work of Grant et al. and of Dale, which suggests that urticaria may be due to the release of acetylcholine in the skin due to stimulation of cholinergic nerve fibers, and that the release of acetylcholine then leads to the liberation of H substance with the production of the wheal and flare, does not invalidate the importance of studies of a histamine-like substance in the urticarial diseases.
3. Best, C. H. and McHenry, E. W.: The Inactivation of Histamine, *J. Physiol.* 70:349, 1939.

taminase is being widely tried in a number of allergic diseases⁽⁴⁾. Our interest in the application of this type of therapy to clinical allergy has been chiefly in the urticarial diseases.

Since the method of clinical trial is slow and tedious, we undertook a more direct approach to the problem by attempting to discover whether histaminase previously introduced into the body, either by oral administration, or by local injection, or by ionization, was capable of modifying the whealing which regularly follows the intracutaneous injection of histamine. With this in mind the following experiments were carried out.

Experiment No. 1. Into the skin of the forearm of 29 persons .05-.1 cc. of a solution of 1-1000 histamine phosphate was injected. Ten minutes later the longest and shortest diameters of both the wheal and the flare were measured and recorded, and an accurate drawing of the reaction was made. Each of the 29 persons then took from 27 to 75 units of histaminase (Torantil) daily for three days. At the expiration of this time a corresponding site on the forearm opposite to the one previously chosen was selected and the same size dose of 1-1000 histamine phosphate was injected intracutaneously at a depth approximately the same as that employed in the first injection. The size of the resulting wheal and flare was measured as before and recorded.

Results: In these 29 persons the oral administration of large doses of histaminase for three days failed, with few exceptions, to alter in size or character the wheal and flare produced by a small intracutaneous

dose of histamine phosphate subsequently given (table 1).

TABLE 1
Effect of histaminase taken orally on the histamine wheal.

Size of wheal in mm. after .1 cc. of 1-1000 histamine was administered intracutaneously.			
No.	Before histaminase	After histaminase	Dose of histaminase*
1	15 x 20	15 x 25	270 units
2	12 x 18	13 x 14	200 "
3	15 x 40	13 x 26	81 "
4	18 x 22	18 x 26	200 "
5	17 x 24	14 x 20	200 "
6	16 x 17	16 x 20	200 "
7	15 x 20	24 x 26	200 "
8	22 x 22	22 x 30	200 "
9	25 x 70	25 x 35	81 "
10	11 x 30	14 x 21	81 "
11	10 x 22	11 x 20	81 "
12	17 x 25	18 x 21	81 "
13	10 x 50	6 x 30	81 "
14	15 x 15	14 x 15	135 "
15	10 x 15	20 x 21	135 "
16	12 x 20	14 x 15	135 "
17	15 x 23	15 x 20	135 "
18	17 x 22	18 x 20	135 "
19	25 x 50	20 x 20	135 "
20	12 x 25	15 x 30	135 "
21	14 x 19	14 x 20	135 "
22	16 x 22	13 x 20	135 "
23	18 x 20	18 x 25	135 "
24	15 x 20	20 x 35	135 "
25	15 x 20	20 x 20	135 "
26	20 x 25	18 x 20	135 "
27	25 x 28	23 x 25	200 "
28	16 x 22	15 x 25	200 "
29	18 x 23	15 x 18	200 "

* The total dose was divided into three daily oral doses taken over a period of three days. Torantil, made by the Winthrop Chemical Company, was used.

In order to test further the possibility of altering the histamine wheal and flare by the previous administration of histaminase, a unit of histaminase was injected intramuscularly into the arm of 3 hospital patients on three successive days. When 0.1 cc. of 1-1000 histamine phosphate was then injected intracutaneously the size and appearance of the wheal and flare was identical with the previous controls.

A study of the effect of histaminase on higher dilutions of injected histamine was then undertaken. Into several local areas of the skin of the forearms of 3 normal persons histamine was injected in the following dilutions: 1-3000, 1-6000, 1-9000, 1-18,000, 1-36,000, 1-72,000, 1-144,000. The sizes of wheal and flare were measured and recorded. Each person then took by mouth 125 units of histaminase in nine doses spread over a period of three days. At the end of this period the skin injections with the same dilutions of histamine were repeated in approximately the same skin areas. Measurements

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- (b) Ertl, E. E.: Zur endonasalen Heufieberbehandlung (Mit Demonstrationen), Monatsschr. f. Ohrenh., No. 1, p. 122, 1937.
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- (e) Moldenshardt, H.: Med. Klin., 32:153, 1936.
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- (g) Roth, S. M. and Horton, B. T.: Hypersensitiveness to Cold, Treatment with Histamine and Histaminase, Proc. Staff Meet. Mayo Clinic, Vol. 12, No. 9, March 3, 1937.
- (h) Baker, T. W.: Histaminase in Cold Allergy, J.A.M.A. 114:1059, 1940.
- (i) Roth, G. M. and Rynearson, E. H.: The Use of Histamine and Histaminase in the Treatment of Allergic Reactions to Insulin, Proc. Staff Meet. Mayo Clinic, Vol. 14, No. 23, June 7, 1939.
- (j) Foshay, Lee: Histaminase in the Treatment of Serum Sickness, J.A.M.A. 112:2398, 1939.
- (k) Nakoda, J. R.: Treatment of Duodenal Ulcer with Histaminase, Rev. Gast. Ent. 6:389, 1939.
- (l) Miller, Hyman and Piness, George: Histaminase in the Treatment of Allergy, J.A.M.A. 114:1742, 1940.

of wheal and flare were again made and recorded.

Results: Ingested histaminase produced inconstant differences in the size of wheal and flare when compared with control injections, irrespective of the dilution of histamine used (table 2).

TABLE 2.

Effect of histaminase on the wheal and flare produced by histamine in various dilutions*

Measurements of wheal (W) and flare (F) in mm.

Dilution		No. 1		No. 2		No. 3	
		Before	After	Before	After	Before	After
1/3,000	W	15x20	16x18	15x15	15x15	15x20	16x18
	F	30x40	40x55	30x35	40x30	40x55	70x50
1/6,000	W	16x20	18x15	12x12	14x14	12x12	15x14
	F	30x40	40x40	35x35	35x40	50x40	50x45
1/9,000	W	15x14	15x18	10x10	7x8	9x10	13x12
	F	20x30	30x40	30x30	30x15	35x35	50x10
1/18,000	W	10x12	13x11	10x10	8x7	14x14	14x12
	F	25x25	30x40	25x30	45x40	40x42	35x35
1/36,000	W	5x5	14x13	12x12	7x9	12x14	10x10
	F	30x30	30x35	35x30	25x30	40x45	30x35
1/72,000	W	4x4	6x8	7x5	7x9	10x10	12x10
	F	20x30	32x35	35x30	30x30	25x30	35x40
1/144,000	W	4x4	7x5	7x4	5x4	7x7	8x8
	F	20x20	25x25	25x25	20x25	30x20	30x30
Control	W	4x4		4x4	4x4	5x5	4x4
	F	Neg.		20x20	Neg.	Neg.	Neg.

* The dose of histaminase was 135 units. The amount of histamine injected was .8 cc. The time between injections was three days.

Experiment No. 2. Into the forearm of 5 persons .1 cc. of 1-1000 histamine phosphate was injected intracutaneously, and the size of the resulting wheal and flare was measured and recorded. Into the skin of the opposite forearm 1/3 unit of histaminase was injected into three separate areas. At the expiration of thirty, sixty and one hundred and twenty minutes respectively .1 cc. of 1-1000 histamine phosphate was injected into each of these previously prepared areas, and the resulting wheal and flare was measured and recorded.

Results: In none of these cases was there significant alteration in the size or form of the histamine wheal produced at the site of previous histaminase injections when compared with the controls in the opposite arms.

Experiment No. 3. A small pad covering an aluminum electrode was saturated with 1-1000 histamine phosphate and placed over the skin of the forearm. Three milliamperes of positive current were passed through it

for five seconds. In a similar way other areas of the skin were treated for fifteen, thirty, and forty-five seconds respectively. In each instance a wheal corresponding to the size of the electrode with a marked surrounding flare was produced. It was found that five seconds by this method was sufficient for the production of distinct whealing.

Substituting a buffered solution of histaminase for histamine phosphate a similar experiment was performed. Slight whealing occasionally occurred around the margin of the area in contact with the positive electrode when the time of application was one minute or more, but usually there was no reaction.

Solutions of one unit of histaminase and one milligram of histamine were incubated together for twenty-four hours at 37.5 C. One-tenth of a cubic centimeter of this solution failed to produce a wheal when injected intracutaneously. When the pad covering a small aluminum electrode was saturated with this same solution and applied to the forearm and a positive current of three milliamperes was passed through it for three minutes no wheal appeared.

An attempt was made to discover if the neutralization of histamine by histaminase, which occurred in the test tube after incubation, could be reproduced in the skin by introducing histaminase into it by ionization prior to ionization with histamine. To determine this an aluminum electrode covered with a pad saturated with histaminase (one unit to 2 cc. of phosphate buffer solution) was placed over the skin of the forearm at four separate marked areas and a positive current of three milliamperes was passed through each area for three minutes. After intervals of one, two, three and four and a half hours respectively a fresh pad-covered aluminum electrode, saturated with 1-1000 histamine phosphate, was applied successively to each of the four areas previously subjected to histaminase ionization. A current of three milliamperes was passed through each for ten seconds. The resulting wheals and flares were measured and compared with the wheal and flare of the control area in which a histamine saturated electrode pad was similarly applied without previous ionization of the skin with histaminase.

Results: In no instance did the previous ionization of an area of the skin with histaminase alter the size of the wheal which developed when histamine was carried into the skin by ionization.

Experiment No. 4. Into the skin of the forearm of 3 persons 1/10 unit of histaminase in buffered solution was injected⁽⁵⁾. One hour later a histamine saturated pad of a positive aluminum electrode was applied over the same area and a current of three milliamperes passed through it for thirty seconds. The resulting wheal and flare was measured and recorded and compared with a control wheal and flare previously produced by passing a current through a histamine saturated pad of an aluminum electrode of three milliamperes for thirty seconds. At the expiration of 100 minutes, 160 minutes, and 220 minutes respectively, other areas of the skin were similarly tested.

Results: In no instance was the wheal produced by ionization with histamine after the intracutaneous injection of histaminase smaller than the control wheals.

Conclusions

In none of the above experiments could it be demonstrated that histaminase previously administered orally or parenterally or by ionization modified in any respect whealing produced by the intracutaneous injection of histamine or its attempted introduction into the skin by ionization. In view of the recognized ability of histaminase to inactivate histamine after proper incubation *in vitro*, these failures suggest several possibilities: (1) The dose of histamine delivered into the skin in these experiments may have exceeded greatly the quantity ordinarily freed by tissue injury in allergic diseases. (2) The concentration of histaminase locally in the skin, even if other conditions for inactivation had been optimum, may have been inadequate for neutralization of the injected histamine. (3) It has been shown that an incubation period, usually twenty-four hours at 37.5 C., is necessary for the inactivation of histamine by histaminase *in vitro*. In our experiments the interaction of histaminase and histamine, to be effective, had to be immediate. The fact that there was no apparent neutralization of histamine in the experiments above reported suggests that, *in vivo* as well as *in vitro*, the time element may be an important feature of histamine inactivation by histaminase.

5. Inflammatory reactions follow intracutaneous injection of histaminase with redness, heat and swelling developing in twelve hours and lasting one or two days.

PSYCHIATRY AND THE SELECTIVE SERVICE

ELBERT A. MACMILLAN, M. D.

WINSTON-SALEM

The United States has launched upon a military era unprecedented in its history. For the first time in the nation's history a virtual war-time footing is being reached in a time of formal peace. The Selective Service Act of 1940 enables the government to mobilize man power in a manner that no peacetime regime has ever before seen in America. Countless problems are arising to harass Director Dykstra and his thousands of subordinates who are grubbing about madly in a renovated apartment house across Constitution Avenue from the War Department. The draft of 1917 was hurriedly put through, and many mistakes were made. Every effort is being made to profit by the errors of those stumbling, hectic days.

One of the most reliable measures of human intelligence is the ability to profit by experience, and some of the nation's best brains are now occupied constantly with efforts to apply the lessons learned in 1917-18 and subsequently.

This presentation is to deal with one tremendous problem raised by the Selective Service Act—that of recognizing in advance individuals who are intellectually, emotionally, or morally unfit for service in the armed forces. Lack of proper attention to this most vital problem in the previous draft has led to the population of army hospitals with thousands of men who for one reason or another cracked up mentally under the strain of military service. Military life requires that a man be able to live under discipline in close contact with a large and heterogeneous group of men. The costly experience gained in the World War indicated that the mental defective, the psychopath and the individual with any marked degree of personality defect are better left out of the service. Many of these people have learned to make some sort of adjustment to civilian life, even in many cases being able to support themselves. Inducted into the Army,

The author attended a symposium for psychiatrists of the medical advisory boards, held in Washington in January, 1941. Much of the information contained in this paper is based on material presented at this symposium, but no attempt is made to credit each source individually. It was urged upon the men in attendance at the symposium that they get this information before the examining physicians of the local boards in any way possible.

however, they have to meet service conditions which aggravate the handicap of some, and which may indeed deprive them of their previously possessed capacity to serve useful roles in civilian life.

In the seventeen years following the World War the government has expended \$924,537,613 for the care of disabled neuropsychiatric cases which arose from our short participation. More than one half of the payments to disabled veterans since the war have been to those disabled by reason of some mental or nervous disorder. The importance of this for us now as we enter into a new phase in the military life of the nation is that by proper selection many of these unfortunates might have been screened out of the armed forces with resultant saving in expense, impairment to morale and general disorganization of civil and military life. It is perfectly obvious to us now that a large proportion of men who developed a gross nervous or mental disorder while in the military services in 1917-18 should never have been accepted in the first place. It has been said with that omnipotent wisdom of hindsight that 90 per cent of those affected by these disorders had shown some symptoms before being selected for the service. Fifty per cent had a history of mental illness in the family. Another fact gleaned from the records of the Selective Service Act number 1 is that we Americans seem to be in a class by ourselves in the incidence of mental disorders. Of the American casualties arising out of the World War about 50 per cent were found to be neuropsychiatric in nature. Of the somewhat more than a million British casualties, 20 per cent were of this type. Incidentally, it has been stated recently that 30 per cent of the British casualties at Dunkirk were neuropsychiatric. In the volunteer peace time army which this country has been supporting since the World War 17.52 per 1000 per annum became mental problems. It is said that when our present army reaches a strength of 1,500,000 3,500 beds will be needed constantly to care for the mental casualties. Of the 2,700,000 men in our 1917 draft army 78,000 were rejected for neuropsychiatric disorders, while about 95,000 additional men became disabled during service. North Carolina, by the way, was third in the forty-eight states during the World War in the incidence of both the major and minor defects.

In order to prevent some of the misfits who will be included in the draft during the next five years from reaching the service there is now being made a concerted effort to inform the draft boards, the examining physicians, and members of the Medical Advisory boards as to early manifestations of the conditions which have been found most troublesome. It was my pleasure to attend a recent meeting in Washington, called by Dr. Dykstra, Director of Selective Service, in which many of the problems were discussed; and it is clear that the greatest of efforts are being made and will continue to be made to prevent further waste and stultification of the service by men who are mentally or emotionally unfit to make soldiers.

To illustrate the gravity with which the authorities regard this problem, Medical Circular No. 1, issued by the Selective Service on November 7, 1940, as the first supplement to the routine medical booklet issued earlier, deals entirely with the psychiatric examination of registrants. The services of the William Allanson White Psychiatric Foundation have been enlisted for this work, and Dr. Harry Stack Sullivan, formerly of the Foundation, has now a full time position with the Selective Service Board.

What, then, may we regard as the qualities in a registrant which may be regarded as disqualifying? In the first place, in the interest of maintaining the optimum civilian morale, it is being emphasized that men are selected for military service because of positive qualities which make them good material, rather than that they are rejected because of unfitness. It is being further emphasized that the selection of men for the present service is not for immediate military service abroad, but rather in the interest of building up a reserve which will serve the country for ten years in the future. The burden is thus being placed upon the examining physicians and the medical advisory board psychiatrists of seeking assurance in their examination of a man, not only that he is in a state of mental and emotional balance at the time of examination, but that he is likely to remain in that state for the next decade. This is a large order, and one that of necessity cannot be filled in its entirety. But upon the relative success of this undertaking depends a great deal of the success of our challenge to the dictator nations.

Five types of mentally impaired individuals have been recognized as being unfit for military service (See Medical Circular No. 1). *Type I* is the group of mental defectives. These are the individuals who are so lacking in cerebral development as to be unable to comply with clear instructions. The school record often reveals poor learning ability, and in borderline cases a psychometric test is of benefit.

Type II. Besides those who are deficient in intelligence, there are individuals of average intelligence who are more or less incapable of profiting from experience. They are the constitutional psychopaths. They are egocentric, narcissistic, incapable of deep and sustained affection, and they constantly exhibit poor judgment. It has been said that the psychopath loves the limelight and can't stand prosperity. This type of individual is perhaps the most difficult for the examining physicians and psychiatrists to recognize. He is not adaptable to employment or to enduring group life and is totally disqualified for national service.

Type III. Major abnormalities of mood. This group includes the manic-depressive patients, many of whom are not patients at all, but men and women in all walks of life. The story is told of one officer during the World War who had once suffered an attack of acute mania but had apparently recovered completely. He remained an aggressive type, a good mixer, and a brave and excellent officer. This happy state of affairs was one day terminated quite suddenly when he commanded his batteries to be turned on his own men behind the lines. It was necessary to confine him with violence.

Type IV. The psychoneurotic disorders. These include the large group of hysterics, morbid anxiety, and hypochondria. Many cases of so called shell-shock during the World War are now recognized in retrospect as cases of hysteria. Many men who have obscure physical complaints, who ride sick-leave, who have always a tale to tell of some miraculous escape from the jaws of death are in this category. It is a gross error in judgment to believe that this type of man will be benefited by military service. His symptoms are much more likely to be aggravated.

Type V. The final category includes those with grave mental or personality handicaps. The suspicious, the "queer ducks", the

morose, and the shiftless and nomadic fall into this group.

Perhaps the most prevalent misconception regarding the Army is that it possesses some miraculous power by which it is able to convert the town ne'er-do-well into a shining example of good citizenship, a man who after a three year stretch under the colors will come back home with all his faults erased. I have a suspicion that the Army has itself to thank in part for this lamentably erroneous premise. In days not so far removed from the present the business of being a peacetime soldier, especially a private, held no great inducement, and the Army has been known to make some rather exaggerated claims as to what it could do with the poor clay of civilian life. The Army still feels that it can do something for the physical development of its personnel, but it washes its hands of any responsibility for improving a man mentally or emotionally. Indeed, its leaders are now in the position of maintaining that army life will bring to light latent mental defects, and that an individual so afflicted may well leave the service in worse, rather than better shape in this regard. Lt. Col. William C. Porter has recently had to say on this subject: "The army is not a social service or a curative agency. There is no place in it for the physical or mental weakling."

It is the psychiatric belief now that there are many men in civilian life who fall in one or another of the five categories named above, who are getting along very well in some small sphere where they are well sheltered and protected. If the props are taken away from these men, as they are when they enter the military service, they crack very promptly, becoming often not only unable to continue in army life but even unable to return and take up the threads of their former lives. An individual who has been able to make his way in a small niche of society has been deprived of this ability, and has now very likely become a charge of the state.

Another group which has come to be considered totally unfit for military service are the alcoholics. The abuse of alcohol is almost invariably the result of the need of an individual for a prop, or a crutch to help ease the rough spots along the way. So it is not the drinking so much in itself that is

disabling, but the personality defect which calls for support. Dr. E. A. Strecker, Professor of Psychiatry in the University of Pennsylvania, has put it thus: A man begins the use of alcohol as a crutch to help him over the uneven ground in life. Instead of becoming stronger and finally able to put away the crutches, too often he comes eventually to the point where he must use them on the smooth ground as well as the rough. It has recently been decided, on the basis of an exhaustive study of 187 patients in St. Elizabeth's Hospital in Washington that any man who has been arrested on two occasions for drunkenness must be considered as unfit for military service. Certainly this is an arbitrary decision, and one which may deprive the Army of some good men, but those in charge seem willing to risk losing a few fit men by such a ruling rather than encumber the service by many who are unfit. Another arbitrary ruling has recently been made to the effect that any man who has been admitted to a hospital for mental and nervous diseases is not to be considered as fit material. This decision was made because of the expense and difficulty of obtaining records from mental institutions. Another general rule is to eliminate those who for any reason have proven an expense to society.

Because of the large number of men who have been found to develop some neuropsychiatric disorder early in their military service, and in the belief that these early breaks represent the culmination of mental difficulties which had arisen before military service began, the Army now refuses to accept responsibility for mental disorders which develop during the first six months of service. During the World War 10 per cent of neuropsychiatric ailments commenced on the first day of service, and 50 per cent commenced during the first year. As a matter of fact, the Army cannot so easily divest itself of the unpleasant obligations which arise when a break occurs. An effort is made to have the family take back the ailing member. The families so concerned have shown an understandable aversion to this solution of the problem, and the Army frequently finds itself stuck with the patient, ruling or no ruling.

It is worth while to consider some of the hazards to normal mental and emotional balance inherent in military service. The con-

flict over killing is perhaps one of the most significant of these factors. In civil life killing is antisocial, criminal, and opposed to all the tenets by which civilized man lives. In army life to kill is commendable, and training in the technique of killing is begun early in army life. It is not possible to reverse overnight an entire pattern of behavior, a code of morality which has been ingrained since early childhood. One of the thoughtful soldiers depicted in Ernest Hemingway's new novel "For Whom the Bell Tolls" is represented as suffering from recurring bouts with his conscience concerning the taking of human life. Certainly the conflict engendered by this primary feature of military life puts too great a strain on the adaptability of many persons.

Modern warfare has seen the introduction of new and more heinous threats to the mental balance of the soldiers concerned. The parachute troops, screaming bombs, machine gunning from low flying planes, terrifying tales of the horrors to be visited upon opposing armies—all these are a part of what has come to be known as "the strategy of terror", and are vitally important in the production of rapid increases in the incidence of the so called war neuroses. The first World War was the first war in which the terrific import of these conditions was felt. In the old days war was terrible, to be sure, but at its worst it had nothing to compare with the physical and psychic impact of a panzer division. No doubt as time goes on military experts will be able to allay much of the unreasoning terror which may be spread by the Hitler technique, but now we are in a stage of military development, or regression, in which psychological weapons are as deadly as those of iron and steel.

We admit, then, that it is desirable to keep mental unfits out of the military service; but what is being done to accomplish that end? In the first place, a large staff in Washington, headed by the previously mentioned Dr. Harry Stack Sullivan, is giving its undivided attention to the matter of disseminating information to draft board officials, medical examiners, and medical advisory board psychiatrists. One of the greatest problems now recognized is to get a proper proportion of the men coming up for examination into the hands of the psychiatrists. There are some six thousand local

draft boards in the country, a number which makes it virtually impossible that each man who is examined should have a proper psychiatric examination. Therefore the burden falls on the examining physician to recognize as nearly as possible all those who should have more detailed mental investigation. It has been reckoned that unless 5 per cent of all the men examined reach the psychiatrists by referral, some men who belong in the categories mentioned previously are slipping through the screen into the service. Of course, if unsuitable men are passed by the local board physician and advisory board psychiatrists, there is still the examination by the army induction board doctors. However, since these boards are called upon in times like these to do an almost superhuman amount of work, it cannot be expected that all earlier mistakes can be rectified here.

One factor in the screening out of undesirables is the proper assimilation of historical material concerning the registrants. It is certainly true that without such material, many who should be eliminated on past behavior will be missed. Certain cases of what have been called simple adult maladjustment will be missed unless some sort of social history is available. It has come to be the studied judgment of those who have given most time and attention to this problem that any case of doubt as to a man's mental qualifications should be resolved in favor of leaving him out of the service. It is better to miss a few men who would make good soldiers than to pick one who by reason of some handicap of temperament, personality or mental fitness might prove detrimental to morale or burdensome to the medical detachment. So we see that in the Selective Service Act of 1940 though there is a slight letting down of the bars in the matter of physical requirements, every effort is being made to elevate the standards in other respects. Even the long kicked-about problem of the differentiation of hysteria from malingering has lost much of its point, because, as one officer has put it recently, a man is just as much disabled by a self-inflicted bullet wound through the calf of his leg as by the hysterical paralysis of a leg. Though it has not been said in so many words, the impression is inescapable that the powers that be are willing to allow examining physicians

to appear to be taken in by the wiles of the faker and malingerer and to pass up these men for active military service. Some other function can be found for them.

Indeed this leads to what is considered one of the most important of the functions of the psychiatrist in the choosing of men for the draft army. And this is in picking the right men to do the right work. In modern total war the dirty work must not all be done by the soldiers. In England now the front line is the clothes line in the backyard of the Welch miner or the Birmingham factory worker. In fact it is said that the armed services in Great Britain offer greater safety than any other occupation in that war torn land. There will be something for all of us to do in the days that are to come, and a young, single male may be put to many uses, only one of which is service in the armed forces.

Much research has been done in recent years on psychiatry, and several important contributions have been made, especially the development of nicotinic acid as a specific in the treatment of pellagra, and insulin and Metrazol shock therapy in dementia praecox. Sociological and anthropological advances have also been made.

Altogether the future holds hope, and there is reason to believe that if international sanity is some day restored, there may be a brighter and better day for the mental health of the individual.

The Physician as a Psychologist.—The physician must train himself to be a practical psychologist so that he may quickly fathom the unspoken reactions of the patient which are frequently more outspoken than uttered words but which may entirely escape the unwary. It is important that this appraisal be instantly accomplished for the ensuing procedure may be dictated by a fleeting impression. The ability to delve into the psychic reactions of the patient and often to anticipate unexpressed reactions is frequently referred to as intuition. It comprises no mystic powers but only the alert interpretation of subtle expressions, both uttered and unuttered. As the physician is usually the interrogator, he should always attempt to command this advantage. The approach to each patient necessitates a variation in technic and it is frequently important to engage the individual in general conversation before bluntly plunging into the presenting problem. Many times the alert physician obtains invaluable clues regarding the patient before a word of the individual's physical complaint has been stated.—F. A. Willius, M.D.: A Talk on the Science and the Art of Medical Practice, Proc. Staff Meet., Mayo Clinic, 15:649 (October 9) 1940.

ARTIFICIAL PNEUMOTHORAX

Supplemented With

THE PHRENIC NERVE OPERATION

ALLISON L. ORMOND, M. D.

BLACK MOUNTAIN

Pneumothorax

Dr. Clive Riviere of London has said⁽¹⁾, "No more hopeful ray of sunshine has ever come to illumine the darkened kingdom of disease than that introduced into the path of the consumptive through the discovery of artificial pneumothorax." Hippocrates, in his treatise "On Affections" about the year 490 B. C., suggested the injection of air into the chest for therapeutic purposes. In 1819 James Carson of England first urged the use of pneumothorax, after experimenting with induced collapse in animals. In 1821 Carson read before the Royal Society of London⁽¹⁾: "Pneumothorax should be used in those cases with consumption in which the disease is placed in one of the lungs only: The remedy would appear to be simple, safe, and complete." "It has long been my opinion," he said, "that if ever this disease is to be cured—and it is an event of which I am by no means disposed to despair—it must be accomplished by mechanical means, or in other words by a surgical operation." He observed also that the lungs should be brought to a state of collapse by degrees only. This startling revelation seemed to have made no impression on the medical world, and the simple physiological principles were forgotten for sixty years.

In the interim between James Carson's revelation and Forlanini's scientific treatise on artificial pneumothorax, Laennec discovered and effectively applied principles of the stethoscope and the diagnosis of chest disease; Pasteur founded the science of bacteriology and gave a lasting contribution to surgery by his convincing proof that bacteria cause infectious disease; and Sir Joseph Lister introduced the use of antiseptics in

surgery. Thus, Laennec, Pasteur, and Lister laid the foundation that enabled James Carson's dreams to be realized.

In 1882 Forlanini of Italy published his now famous scientific treatise on artificial pneumothorax. He accounted for the beneficial effects of artificial pneumothorax in these words⁽²⁾: "The lung shrivels—the lung no longer breathes—the lung that cannot breathe any more, cannot any more cough or expectorate." He recognized the necessity of frequent refills with small doses—the exact procedure that still proves most beneficial and effective—; the fact that adhesions prevent effective collapse; and the fact that lungs would re-expand by absorption of gas if refills were discontinued.

In 1898 Dr. John B. Murphy of Chicago reported before the American Medical Association his experience with artificial pneumothorax. He was the first to utilize this type of treatment in the United States.

One of the pioneer physicians in tuberculosis work was our own Dr. Mary E. Lapham, whose original exacting work in artificial pneumothorax at the now closed Highlands Sanatorium stands as a lasting monument to her name. In 1912 before the meeting of the National Association for the Study and Prevention of Tuberculosis in Washington, she reported her results from the use of artificial pneumothorax in the little Sanatorium in the mountains of North Carolina—the first work of this kind done in this state. Between 1910 and 1913 she published nine reports of her experience with pneumothorax⁽³⁾. Dr. Mary E. Lapham, who learned the technique in 1909 from Von Muralt of Davosdort, Switzerland, deserves much of the credit for bringing to the attention of the American physicians this most useful procedure.

The Phrenic Nerve Operation

Prior to 1902 the medical world believed that the diaphragm was such an essential organ of respiration that paralyzing the phrenic nerve would result in an immediate fatality⁽²⁾.

In 1902 Schroeder dispelled this fear by crushing and dividing the phrenic nerve in dogs, and later in human beings while operating on goitres, without seriously interfering with respiration. The mechanical effectiveness of this procedure was quickly grasped

Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Pinehurst, May 11, 1940.

I am indebted to Dr. S. M. Bittinger, Associate Superintendent and Medical Director of the Western North Carolina Sanatorium, for his cooperation and helpful technical suggestions. I wish to acknowledge with thanks the assistance of Miss Louise Barker for typing this article; Miss Elizabeth Wilburn for compiling statistics.

1. Riviere: Pneumothorax and Surgical Treatment of Pulmonary Tuberculosis.

2. Alexander: The Collapse Therapy of Pulmonary Tuberculosis.

3. Warning, J. F.: The History of Artificial Pneumothorax.

by those groping for additional help in closing tuberculous cavities. At the present time the phrenic nerve paralysis is an integral part of the daily routine of all wide awake sanatoria.

In selected cases experience has shown that a phrenic nerve crush initiated early in the course of the disease will shorten the period of hospitalization. It is a grave and unforgivable mistake to try all patients first on a definite pre-determined length of bed rest, since 50 to 80 per cent of them need immediate supplemental collapse therapy. In the majority of patients the period of disability can be shortened by combining surgical rest with bed rest. Alexander says, "An early minor operation is at least as likely to be effective as a late major operation."

Very early after the induction of artificial pneumothorax we look for evidences of impending incomplete collapse. If such is observed we paralyze the phrenic nerve on that side as quickly as possible. Depending upon the indication, the nerve is temporarily or permanently paralyzed. The result is a paralysis of the diaphragm on the diseased side, which brings about the partial rest of the lung. Six to ten months after the temporary paralysis the function of the diaphragm returns. In the interim there has been sufficient time to determine the effectiveness of the operation, and a large proportion of good lung tissue is restored to functional usage.

Following the paralysis of the diaphragm the muscle tone is destroyed⁽⁴⁾, the fibers of the central tendon lengthen and thin out, and the vault of the diaphragm rises into the thoracic cavity. The extent of the rise depends upon the presence or absence of adhesions; it often rises 5-10 cm., and even higher. Cavities often close quickly; sputum lessens and frequently becomes entirely negative; and toxic symptoms rapidly abate and oftentimes entirely disappear. The interval of subsequent refills of pneumothorax immediately following the operation is lengthened to 10-14 days, so that the diaphragm may be allowed to rise as high as possible with the minimum of resistance.

Artificial Pneumothorax and Phrenic Nerve Operation Combined

Doubt⁽⁵⁾ has recently been thrown upon the

value of collapse therapy in tuberculosis by two publications in the past two years. Drolet⁽⁶⁾ demonstrated that the ratio of death to new cases in the United States has remained the same during twenty years, in spite of the increasing use of this form of treatment. Brand⁽⁷⁾ in reports to the Joint Tuberculosis Council of England compared the results in a large pneumothorax group from forty-two different institutions with those of two large controlled groups. Comparisons made on the basis of ratios of actual to expected deaths failed to show an advantage for the treated cases.

Publications supporting more or less enthusiastically the results of collapse therapy of tuberculosis are too numerous to enumerate here. In 1935 the Committee on Artificial Pneumothorax of the American Sanatorium Association⁽⁸⁾ reported the results of artificial pneumothorax in eighteen American institutions. Twenty-seven per cent of the cases were dead; 75 per cent of those living were able to work. The Committee concluded that the value of the treatment was demonstrated conclusively.

When we immobilize a tuberculous joint by applying a cast, there is almost always improvement. Improvement follows because the joint has been put at rest, thus limiting to a minimum the activity of the area involved and decreasing the dissemination of toxins. Again, experience has taught us that the greater majority of patients having tuberculous laryngitis can be benefited and many of them cured entirely by rest of the vocal cords. Collapse therapy in pulmonary tuberculosis utilizes the same principle in putting the lung at rest to control the tuberculous process more quickly and more efficiently.

The appalling death rate of the relentless Great White Plague is due in part to the failure of the laity and of a large proportion of the medical profession to appreciate fully the necessity of rest—and, in more recent years, rest by collapse therapy. Every measure at our command should be used as quickly as possible to close every cavity in every chest. The successful treatment of tuberculosis is measured by the closure of

6. Drolet, G. J.: Present Trend of Case Fatality Rates in Tuberculosis, *Am. Rev. Tuber.* 1938.

7. Brand, W.: The Results of Artificial Pneumothorax Treatment, Reports to the Joint Tuberculosis Council, England, February, 1937.

8. Peters, A., et al.: A Survey of Artificial Pneumothorax in Representative American Tuberculosis Sanatoria. 1915-1930, *Am. Rev. Tuber.* 1933, 31-85.

4. Pottenger, F. M.: Tuberculosis in the Child and Adult.
5. Bosworth and Smith: Collapse Therapy in Pulmonary Tuberculosis, *Am. Rev. Tuber.* January, 1939.

the cavity, with the disappearance of the tubercle bacilli from the sputum and the return of the patient to health.

The initial dose of air in artificial pneumothorax is 300 cc. The following day 300 cc. more is introduced into the pleural space. Thereafter the intervals between refills, and the amount of air given are determined solely by frequent fluoroscopic examinations. Small doses of air (from 250 to 300 cc.) at frequent intervals as originally recommended by Forlanini have proven beyond question to be the most effective procedure.

We use a 19 gauge needle $1\frac{1}{2}$ inches long, with a window opposite the bevel. The comparative bluntness is an added protection to the lung and visceral pleura. The window affords an unobstructed entry of air into the pleural space.

Pneumothorax is continued for from four to twelve weeks before the supplemental phrenic nerve operation is considered. The use of this operation depends upon the decrease in the size of the cavity present. If there is a basal collapse with little or no effect upon an apical cavity, no time is lost in resorting immediately to the phrenic nerve operation. If multiple adhesions are noted adjacent to the cavity—particularly such as strings, cords or bands—or if the lung is suspended both from the apex and from the diaphragm, making it obvious that further increase in pressure might cause fluid formation, the phrenic nerve operation is done. Frequently, when there is much dissemination of caseous tuberculosis surrounding a cavity, thus offering more resistance to pneumothorax, a phrenic nerve operation is done not only to assist in closing the cavity, but to allay the toxemia as quickly as possible. A phrenic crush supplementing an inadequate pneumothorax in a patient with frequent hemoptysis almost always checks the hemoptysis. The results from this combined compression have been greater in cavities in the lower half of the lung than in apical cavities. Our best results have been obtained where cavities have been situated in or near the hilum of the lung. Their location near the hilum does not imply that they are central in the sense of being surrounded with healthy lung tissue. On the contrary the walls of many of these cavities are so closely situated in the vertebral gutter that they are widely adherent.

With this combined compression two resultant factors are obvious: the local mechanical effects and the removal of the toxemia. Mechanical effects other than that of closing the cavity are the inhibition of the growth of the tubercle bacillus by the diminution of oxygen and increase of carbon dioxide in the collapsed lung; the stimulation of fibroblastic proliferation by the lymph stasis; and the checking of the disease by walling in of the tuberculous area. The removal of toxemia is evidenced by the disappearance of symptoms: fever, sweat, malaise, wasting, and impairment of general health.

In the collapsed lung cavity walls unite, caseous areas become drier, the disease surfaces are reduced in area, fluid excretions are evacuated and can no more accumulate, and absorption is reduced to the minimum because of lymph stasis⁽¹⁾. The lung is finally retracted to a firm, airless, fleshy mass; cavities and tubes are flattened out and their surfaces become adherent; and the diseased areas become permeated with dense fibrous tissue.

Phrenic nerve interruption was combined with pneumothorax in 95 cases. Fifty-two, or 54.7 per cent of these cases, are still in the hospital. The sputum was positive in 39 cases, or 41 per cent, and negative in 56 cases, or 59 per cent, following the operation. The sputum was positive in the entire group of 95 cases prior to the phrenic nerve interruption. It is interesting to note that in the highest number of cases the sputum becomes negative within sixty to ninety days following the supplemental phrenic nerve operation. The average number of days that elapsed from the initial dose of air to the phrenic nerve operation was 176 for the entire group; this includes a number of chronic cases of prolonged hospitalization. The average for those with negative sputum was 123 days. The average length of hospitalization for the entire group was 370 days; for the discharged group, 275 days. Out of the total group 86 cases, or 90.5 per cent, were classified as far advanced, and 9 cases, or 9.5 per cent, were classified as moderately advanced.

In the total group the phrenic nerve was crushed in 88 or 92.7 per cent of cases; it was evulsed in 7 or 7.3 per cent of cases. The operation was done on the left side in 51 cases, or 52.7 per cent, and on the right

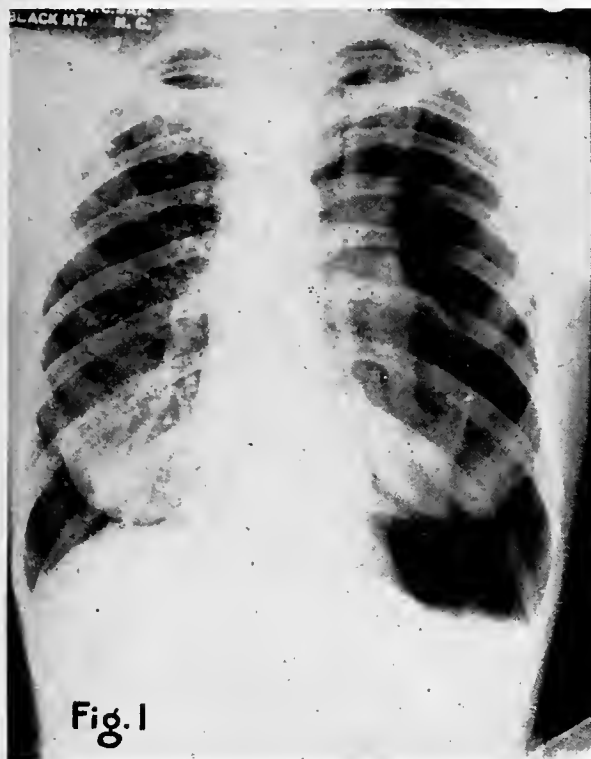


Fig. 1. Case 1, after the induction of pneumothorax and before the phrenic nerve operation was performed.

Note in this case the fifty per cent collapse on the left. The diaphragm is greatly pushed downward because of an effort to close the apical cavity by continued pressure. From the



Fig. 2. Case 1, after the phrenic nerve operation was performed.

apex to the level of the sixth rib in the dorsal aspect there is a huge cavity present. Following the crushing of the phrenic nerve on the left there was marked rise of the diaphragm with the closure of the cavity.

side in 44 cases or 48.3 per cent. One accessory to the phrenic nerve was found in 79 cases, or 83.2 per cent; 2 accessories were found in 8, or 8.4 per cent; and none were found in 8 cases, or 8.4 per cent.

The average rise of the diaphragm was 3.5 cm. There was complete paralysis in 84 cases, or 88.4 per cent, and incomplete paralysis in 11 cases, or 11.6 per cent.

Of the 95 cases 74, or 77.8 per cent, were improved; 12, or 12.7 per cent, were quiescent; 4, or 4.4 per cent, were unimproved; and none were apparently arrested. Out of 74 cases improved, 19, or 25.6 per cent, have full time up or graduated walking exercise to ten minutes twice daily. Death occurred in 5 cases. A large percentage of the remaining 55 cases have a good chance of eventually improving to the quiescent classification. Consequently, it is apparent that out of 95 cases—37, or 38.9 per cent of which are still taking bed rest—the results have been good in 31 cases, or

32.7 per cent. Nine have had a supplemental closed pneumolysis, and 7 have had thoracoplasties. We feel that a large percentage of the 32.7 per cent who have been converted to the quiescent stage would eventually have had a thoracoplasty had it not been for the combined compression therapy utilized in these cases.

Case Reports

The following 8 cases are representative of the combined compression therapy of artificial pneumothorax supplemented with the phrenic nerve operation.

Case 1. Mrs. G. V.'s case was classified as far advanced C tuberculosis. She was hospitalized for fourteen months. The patient had pneumothorax for five months before admission, and because of the inadequate collapse (fig. 1) the phrenic nerve was crushed eleven days after admission. The sputum on admission was a Gaffky VIII. The sputum was negative exactly four months following the crushing of the phrenic

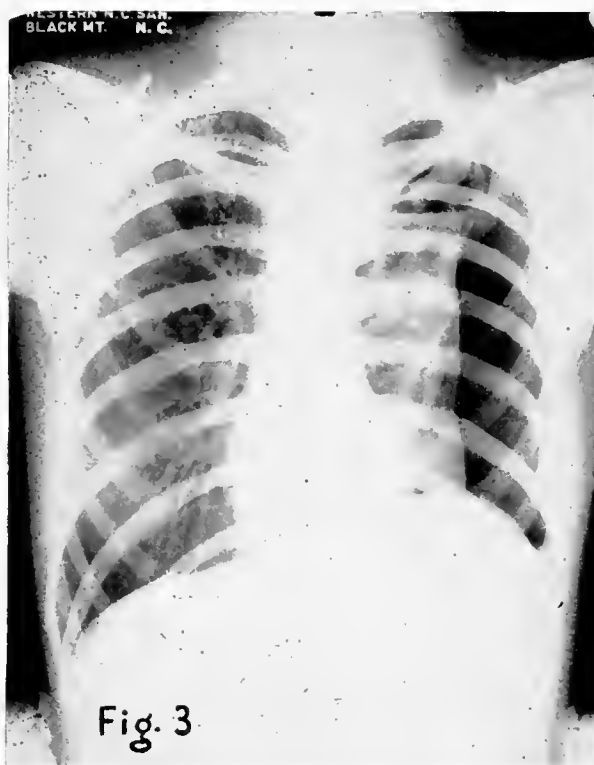


Fig. 3. Case 3, after the induction of pneumothorax and before the phrenic nerve operation was performed.

Note in this case the fifty per cent collapse of the left lung following the induction of pneumothorax. From the level of the apex to the fifth interspace in the dorsal aspect there is

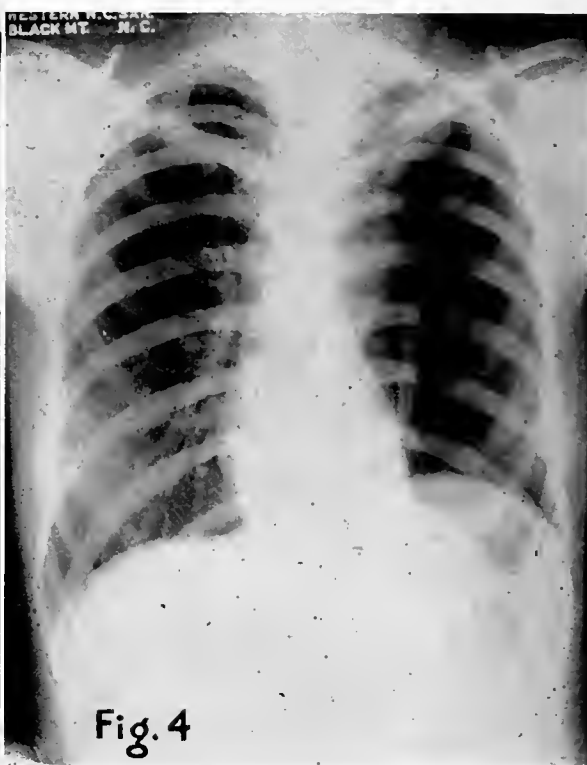


Fig. 4. Case 3, after the phrenic nerve operation was performed.

a large cavity due to tuberculous destruction. This cavity would not respond to pneumothorax. Following the crushing of the phrenic nerve on the left the cavity entirely disappeared.

nerve, and the cavity had entirely disappeared (fig. 2). The patient was on twenty minutes walking exercise twice daily on discharge.

Case 2. Mrs. A. R. had tuberculosis classified as far advanced B. She was hospitalized for fifteen and one-half months. Pneumothorax was begun on the left on February 7, 1939. Because of an inadequate collapse a phrenic nerve operation was done twenty-four days later. On admission the sputum was a Gaffky VIII. Exactly five months and eight days following the phrenic nerve operation the sputum was negative and the cavity was entirely closed. The patient was on twenty minutes walking exercise twice daily on discharge.

Case 3. Mrs. M. M. W. had far advanced B tuberculosis. She was hospitalized for fourteen and one-half months. Pneumothorax was begun in February, 1939. Thirty-four days later a phrenic nerve operation was done because of an inadequate collapse (fig.

3). On admission the sputum was a Gaffky VII. Exactly six months following the crushing of the phrenic nerve the huge apical cavity was entirely closed and disappeared (fig. 4), and the sputum was negative. The patient now has time up.

Case 4. Miss K. R.'s case was classified as far advanced C tuberculosis. She was hospitalized for twenty-six months. Pneumothorax was begun on the right in February, 1938. Seven and one-half months later the phrenic nerve was crushed on the right side, the delay being due to bilateral artificial pneumothorax. On admission the sputum was a Gaffky VIII. Eleven months later the sputum was entirely negative and the cavity was entirely closed on both sides. The patient at the present time has time up and will soon be going to the dining room for her meals.

Case 5. Miss E. D. had far advanced C tuberculosis, and was hospitalized for twenty and one-half months. Pneumothorax was

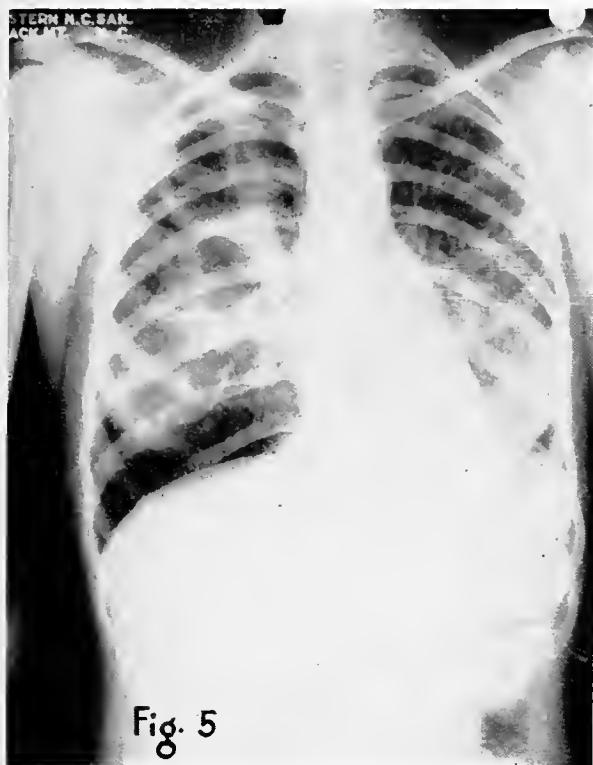


Fig. 5

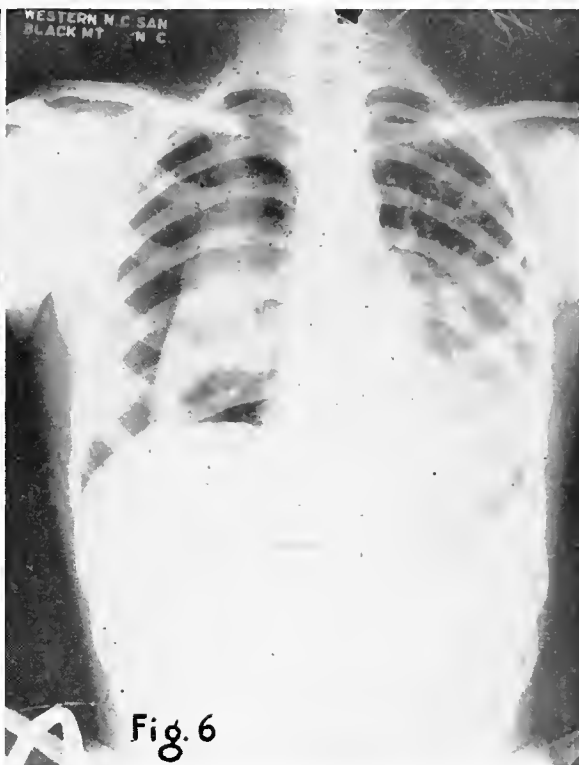


Fig. 6

Fig. 5. Case 5, after the induction of pneumothorax and before the phrenic nerve operation was performed.

Note in this case the approximate forty per cent inadequate collapse of the right lung following sustained pneumothorax. From the level of the third to that of the sixth rib in the

Fig. 6. Case 5, after the phrenic nerve operation was performed.

dorsal aspect there is a huge cavity. From the level of the sixth to that of the seventh interspace in the dorsal aspect there is another cavity. Following the crushing of the phrenic nerve both cavities closed entirely.

begun on the right in July, 1938 (fig. 5). Exactly two months later the phrenic nerve was crushed on the right side. On admission the sputum was a Gaffky III. Seven and one-half months following the phrenic crush the cavities were entirely closed (fig. 6) and her sputum was negative. The patient now has time up and will soon go to the dining room for her meals.

Case 6. Mrs. O. F. had tuberculosis classified as far advanced C. She was hospitalized for twenty-two months. Pneumothorax was begun in February, 1938. Three and one-half months later a phrenic nerve crush was done because of an inadequate collapse. On admission the sputum was a Gaffky VI. Six months later the sputum was still Gaffky V, and the cavity remained open. It was necessary to do a three stage thoracoplasty to render the sputum negative for tubercle bacilli. The combined compression therapy of pneumothorax and phrenic nerve crush was a complete failure in this case.

Case 7. Mrs. L. F. S. had far advanced

B tuberculosis, and was hospitalized for five and one-half months. The patient took pneumothorax for five months prior to her admission. The phrenic nerve was crushed nine days after her admission to this hospital. On admission the sputum was a Gaffky VIII. Exactly one month and eighteen days following the phrenic nerve operation the sputum was entirely negative and the cavity was closed. The patient was discharged, with twenty-five minutes of walking exercise twice daily.

Case 8. Miss V. L.'s case was classified as far advanced C tuberculosis. She was hospitalized for forty months. Pneumothorax was begun on the left on July 27, 1935. A phrenic nerve operation was done one and one-half months before the beginning of artificial pneumothorax, while the patient was waiting for hospitalization. On admission the sputum was a Gaffky VI. Exactly fifteen months later the sputum was negative and the cavities were closed. The patient was discharged from the hospital with

fifteen minutes of walking exercise twice daily.

You will note that every case here presented is classified as far advanced B or C. These cases were purposely selected to show that the combined compression therapy utilized here is and has been a worthy combination compression in many cases. Two of these cases were apparently hopelessly ill upon admission, but persistent compression with the combined therapy here applied has been sufficient to get them back on their feet again.

Abstract of Discussion

Dr. H. L. Seay (Huntersville): Up until the last few years the National Surgeons Organization have been more or less divided as to the value of the phrenic nerve paralysis. In the last two years I believe we have about come to the actual truth of the matter.

It seems to me that the best results in this country have been reported from the large city clinics or state clinics where a great many early cases are seen; and the poorest results have come from health resorts where chronic and far advanced cases often predominate. I think the problem today is one of selection of cases. We all admit, I think, that the operation does produce desirable results in certain cases. We know, as Dr. Ormond pointed out, that it very frequently shortens the period of hospitalization. In many cases it brings about a closure of cavities, lessens the sputum, and reduces or cures the toxemia.

Dr. Ormond pointed out that pneumothorax is usually used about four to twelve weeks before a phrenic nerve operation is done. He also indicated that pneumothorax refill is usually increased immediately after an operation. In that connection I would like to point out that the consensus of opinion is that negative pressure pneumothorax doesn't materially interfere with the rise of the diaphragm, whereas positive pressure pneumothorax does.

In connection with the actual rise of the diaphragm, I would like to ask Dr. Ormond what method he uses in measuring the rise. Dr. Kennedy and I have been using Alexander's procedure of measuring from the highest point of the dome of the diaphragm up to the horizontal line drawn along the upper margin of the first transferred pleural space. I do not think you can always determine the result from the actual rise of the diaphragm. I am sure all of us doing this work have seen cases in which there was a very marked rise and a very poor result. On the other hand, a very slight rise of the diaphragm, provided there is a complete paralysis of the muscular structure, may give a very desirable result—a large cavity may be closed.

In the literature, I think the results have been most favorable with thoracic cavities. The statement is made that apical and basal cavities are about equally susceptible to closure. Dr. Ormond in his series shows that better results were obtained with cavities in the lower half of the lung than in the apex, and his best results were with cavities in

or near the hilum. In our small series at Mecklenburg Sanatorium the results follow his very closely.

I would like to ask one other question. What per cent of his cases had cavities and what per cent of the cavities were actually closed by pneumothorax supplemented with a phrenic nerve operation? John Alexander reported a series some time ago of 116 cases, in 69 of which the cavities were closed, a percentage of 59. He followed this series of 69 cases and found that 23 per cent were arrested in a few months or a year and 59 per cent became quiescent.

Dr. A. L. Ormond (Black Mountain): Dr. Seay has asked what method we utilized in determining the rise of the diaphragm. In about 20 or 25 of these cases we actually measured the rise of the diaphragm according to Dr. Alexander's method of which he spoke. I did not have any definite scientific means of determining the rise in the rest of the cases. We obtained an average of 3.5 cm. in those we did measure.

He also asks how many of these 95 patients had cavities. I'm not able to answer that. I do know that we rarely ever do a phrenic nerve operation on a pneumothorax case that does not have a cavity, and possibly the entire group of 95 had cavities. There may have been two or three that did not.

In the very short period of time we have had at the Western Sanatorium to carry on our work, our results with this therapy have been beyond our expectations. In fact our best results have been obtained with pneumothorax followed with the phrenic nerve operation. We guessed in the beginning that we would obtain good results in about 25 per cent of these cases, but the actual percentage was 38.3. We feel that many of these patients with far advanced tuberculosis have been definitely benefited, and would have come to a thoracoplasty had it not been for the combined compression therapy utilized in these cases. I would much rather take a chance with a phrenic nerve operation than to lose my ribs entirely.

Treatment of older patients suffering from tuberculosis is one of our major problems in the eradication of the disease. A third of the patients in sanatoria are over forty years of age. Temporary forms of collapse treatment in older patients are less apt to be successful than the permanent form provided by thoracoplasty. One-hundred-sixty-two patients between the ages of 40 and 65 treated by thoracoplasty showed improvement of 84 per cent, with 35 per cent returning to work.—Richard H. Overhold, M.D., Amer. Rev. of Tuber., Feb., 1940.

The proper treatment of living cases of tuberculosis is fortunately also the humane, the scientific, and the effective method for its prevention. The proper care of the sick secures the protection of the well. Homer Folks, 6th Inter. Tuber. Congress, Sept., 1908.

War . . . makes pleasant news for the tubercle bacillus. As the deaths from T.N.T. increase, those from tuberculosis lag not far behind. In the World War all countries showed this phenomenon whether under arms or not. What effect on our efforts to eradicate tuberculosis will these grim months ahead bring forth? . . . Unless we find a way to redouble the offensive against our hidden enemy, the sad story of twenty years ago will be told again and we will find ourselves facing a record of lost ground. Kendall Emerson, M.D.

THE USE OF NEOPRONTOSIL IN IDIOPATHIC ULCERATIVE COLITIS

Report of Two Cases

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and

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DURHAM

It is the purpose of this paper to describe the treatment of two cases of idiopathic ulcerative colitis with neoprontosil. There are several theories regarding the causative agent in this disease, but the view held by most clinicians is that a streptococcus organism is the inciting factor. This organism has been isolated directly from rectal lesions, and in some instances of severe fulminating disease, from the blood stream. While this is the generally accepted theory, some investigators have considered a deficiency of vitamins, minerals, and some of the food stuffs as of direct etiological significance.

Report of Cases

Case 1: Mrs. A. E. B., aged 30 years, came in complaining of having blood and mucus in her stools. Her history dated back four or five years. She stated that she had been constipated and had been passing mucus during this period, but for the four or five weeks prior to admission to the hospital she had been passing some blood as well as mucus. This had been most noticeable in the morning. The bowels had remained constipated most of the time; however, she had had some diarrhea. She had had fifteen stools the day she was admitted to the hospital. Frequent stool examinations for ova and parasites had been made, but all were reported negative. There was no history of tuberculosis or cancer in the family. The rest of the history was not remarkable.

Physical Findings: The patient weighed 121 pounds when she was first seen—7 pounds less than her normal weight. There was some seborrheic dermatitis over the body. The heart and lungs were normal. The sigmoid was palpable. The rectal examination showed the anal canal to be entirely normal. The rectum was empty, and no masses were felt. The proctoscopic examination showed the mucous membrane to

be very red, injected and bleeding. A quantity of free pus was noted. The bowel seemed to be quite spastic. X-ray examination of the stomach and colon was negative.

Dr. Julian Ruffin, of Duke University was called into consultation. He gave as his impression "Idiopathic ulcerative colitis of long standing. Proctoscopic examination shows granular friable mucosa with pin-point ulcers."

Laboratory Findings: The urine was negative. The hemoglobin and white cell count were checked practically every day of the patient's stay in the hospital. The leukocyte count ranged from 6,450 to 13,800. The hemoglobin ranged from 70 per cent to 90 per cent. The day she was discharged, the hemoglobin was 90 per cent and the white cell count was 7,900. The stools showed much mucus and were positive for occult blood for the first eight days after admission. The stool culture was negative for typhoid and dysentery bacilli. No ova or parasites were found; no amebas were found. The sedimentation rates were normal. The basal metabolic rate was minus 12.

Course While in the Hospital: The patient was admitted to Watts Hospital on March 14, 1940. During the first two days of her stay in the hospital her temperature went as high as 100 F. For the first two weeks she had four to six stools a day, containing much blood and mucus. During her third week in the hospital her temperature ranged from 100° to 102°. This temperature continued into the fourth week, with a pulse rate of 85 to 125. Numerous therapeutic agents were tried, including large doses of Vitamin B₁, liver extract, and transfusions, none of which seemed to do any good. She steadily grew worse. On March 26 she was put on sulfanilamide by rectum and by mouth. While she was getting this drug her course downward seemed to be much more rapid. On March 30 sulfanilamide was stopped; on this date her temperature reached 102°, and her condition was very poor. On April 4 she was given neoprontosil, 15 grains three times a day for the first day. On the next day the neoprontosil was increased to 25 grains three times a day. On April 7, her temperature dropped to normal and remained practically normal during the remainder of her stay in the hospital. Following April 5, she did not have more than four stools a day. She improved steadily.

ly almost from the time the neoprontosil was begun. She received 75 grains of neoprontosil a day for five days, and then the dose was cut to 60 grains a day. This was continued for four more days. When the patient was discharged from the hospital on April 17 she was taking 30 grains of neoprontosil a day. This was gradually cut down, and was discontinued after three days. The patient weighed 107 pounds when she was discharged. On May 20, she stated that she was having only one stool a day, and was feeling better than she had in years. On June 1, 1940, she went back to work. At this writing her stools still show some mucus, but no blood. All weight loss has been regained.

Case 2: B. A. H., a white male, aged 41. had had undulant fever in the summer of 1939. He made a good recovery and did well until May of 1940, at which time he came into the office, with a slight fever, and complaining of frequent bowel movements. He had lost 4 pounds in four weeks. He had been receiving adequate vitamin therapy since his attack of undulant fever. He gave a history of attacks of alternating diarrhea and constipation dating back four years. His physical examination at this time showed the following findings: The heart was not enlarged, the rate was regular, 108, with no murmurs. The abdomen was soft, and the cecum was thickened and large. The sigmoid was quite spastic. There was no hernia, and no other abnormalities were noted. Proctoscopic examination at this time showed a very spastic anal canal; the mucous membrane was red and showed some punctate spots which looked like small ulcers. No large ulcers were seen. There was a small amount of blood in the stools.

On May 13, the patient was put to bed and was given 75 grains of neoprontosil a day. He ran a fever until June 1, the highest temperature (101.8°) occurring during the first three days. His temperature gradually came down, and after June 1 was normal. From that day on he showed marked improvement. On June 8 he went back to work, and the neoprontosil was stopped on June 10. It had been gradually cut down so that for the last several days he was taking only 30 grains a day. On June 16, he reported normal stools. A weight loss of 6 pounds during therapy has been regained. It should be stated here that in the acute stage of this disease this patient showed a

very marked odor which could be easily detected all over his room.

Comment

Both of these patients were given liver extract, Vitamin B₁ and nicotinic acid, and were kept on a bland diet during the course of their illness. Their blood pictures were watched carefully, especially the hemoglobin and white cell count. There was no tendency toward leukopenia or anemia. Proctoscopic examinations on both of these patients after the administration of neoprontosil showed much improvement.

As was noted, we tried sulfanilamide on one of these patients, and we found, as did Brown and his associates⁽¹⁾, that it was too toxic. In their search for a drug of lower toxicity, they decided that neoprontosil might be the drug of choice. They gave from 4 to 5.5 Gm. a day orally divided into five equal parts. This was given for a period of ten to fourteen days. In the more stubborn cases subsequent courses were given. Usually they had a fourteen day rest period between courses. These investigators do not believe that the effect of neoprontosil is due entirely to the sulfanilamide contained, but that neoprontosil possesses an action which is wholly independent of that of the sulfanilamide.

Conclusion

It seems to us that neoprontosil is of definite value as a therapeutic agent in idiopathic ulcerative colitis. It caused no toxic manifestation in these cases. While the results in these two cases do not prove its value as a therapeutic agent in this condition, they do justify its continued trial.

1. Brown, Alex E., et al.: Neoprontosil (Oral) in the Treatment of Chronic Ulcerative Colitis, *Ann. Int. Med.* 13: 700-711 (October) 1939.

The All Important Question. — A patient usually consults a doctor because he is conscious that there is something wrong with him. The important thing to the patient is this question, "What bearing has the cause of my symptoms upon my future?" When the physician accepts a patient, he should accept the serious responsibility of answering this question to the best of his ability. From talks with many laymen, I feel very sure that people greatly desire physicians who will listen patiently to their complaints and then thoughtfully evaluate the symptoms and physical findings in the light of past study and experience in an honest attempt to answer this all important question. — Warner S. Bump: *Medical Opportunities in a Small Urban Community*, *Wisconsin Medical Journal* 39:978 (November) 1940.

FORCEPS DELIVERY

O. HUNTER JONES, M. D.

CHARLOTTE

There are three factors concerned in forceps delivery:

- (1) The indication for forceps.
- (2) The selection of the proper forceps.
- (3) Technique in the use of the forceps.

In this paper I shall attempt to answer the question as to how often forceps are used, and to discuss the various factors concerned in the technique of forceps delivery. I have reviewed 100 consecutive unselected viable births from my private practice as a basis for discussion. This small series offers merely an approach to the subject, and is presented as such.

TABLE 1

100 Consecutive Unselected Viable Births

Primiparae	66
Multiparae	34
Breech presentations .	5
Vertex presentations .	91
Cesarean sections . .	4
Forceps deliveries . .	73
Episiotomies	73
Cervix inspected . .	54
Maternal morbidity . .	5 (Corrected—2)
Maternal mortality . .	0
Fetal mortality . . .	2 (2%); or fullterm 1 (1%)
Birth injuries	0

Type of Delivery

Of the 100 cases, 4 were cesarean sections; 5 breech deliveries; 91 vertex deliveries.

Parity, Length of Labor

There were 66 primiparae and 34 multiparae. The average length of labor (first and second stages) was approximately thirteen hours for the primiparae and approximately nine hours for the multiparae.

Forceps, Episiotomy, Inspection of Cervix

- (1) There were 73 forceps deliveries. These will be discussed in detail later.
- (2) Episiotomy was done in 73 cases.
- (3) The cervix was inspected in approximately one-half of the cases. Whenever a laceration of sufficient degree was present it was repaired. At some future date, when

enough data have been collected, I expect to make a complete report. However I will say that frequent inspection of the cervix thus far has shown that, while bleeding is the only sign of a lacerated cervix, yet bleeding is usually slight, rarely spurts, and is frequently absent entirely, so that without inspection of the cervix many lacerations will be overlooked.

Maternal Morbidity and Mortality

The morbidity standard used was that advocated by the American Committee on Maternal Welfare—namely, a temperature of 100.4 F. or over on any two days after the first twenty-four hours. By this standard there were 5 cases of morbidity, exclusive of the cesarean cases; the corrected morbidity (omitting the breast and respiratory and genito-urinary tracts) is 2 (2 per cent), with a total of five days' morbidity. The mercurochrome technique (vaginal instillations during labor, as advocated by Mayes) was followed in all cases. One cesarean showed a morbidity.

There were no maternal deaths.

Fetal Mortality

There were two fetal deaths.

One was in a premature infant (7-7½ months), following a spontaneous delivery. The baby lived six hours. Autopsy revealed atelectasis of the left lung.

The other death was due to intracranial hemorrhage in a full term infant. The delivery was a difficult high midforceps. The baby lived sixty hours.

This gives a fetal mortality rate of 2 per cent for the 100 cases, if all viable births (7 months or more) are included; but if only full term births are included the mortality rate is 1 per cent. If only the forceps group is considered, the mortality rate is still 1 per cent.

There were no birth injuries (except probably in the high midforceps delivery described above).

X-ray Studies

X-ray studies were made in 13 cases, or approximately 20 per cent of the primiparae. The technique of Caldwell and Moloy was followed. This consists of anteroposterior stereos, a large lateral, and a film showing the subpubic arch. Perhaps the day is not far off when the obstetrician will be able to

include x-ray study as a routine procedure for every primipara.

As originally pointed out by Caldwell and Moloy, the experience of those, including myself, who use this technique has been that stereoroentgenography is a great aid in the management of patients requiring operative intervention, and in selecting the best type of operative procedure⁽¹⁾. In cases requiring forceps, this method reveals the danger of using a routine forceps procedure, except in dealing with pelves of similar shape. It shows the most advantageous pelvic diameters for traction and the proper levels at which to attempt rotation, and as a result reduces the frequency of difficult forceps delivery. It helps to explain many cases of dystocia.

TABLE 2

X-ray study was done in 13 cases (20% of the primiparae).	
Engagement:	
(Determined by abdominal, vaginal, and rectal examination, plus x-ray studies in 13 cases)	
Transverse position	64%
Anterior position	21%
Posterior position	15%
Analyzed:	
LOA 4 times as often as ROA	
LOI and ROT approximately the same number	
ROP twice as often as LOP	

Findings of Caldwell and Moloy

Engagement:	
(Determined by x-ray)	
Transverse position	60 %
Anterior position	21.5%
Posterior position	18.5%
Analyzed:	
LOA slightly more than ROA	
LOT twice as often as ROT	
LOP and ROP approximately the same number	

Engagement

Although the diagnosis of position in my 100 cases was made by abdominal, vaginal and rectal examination, with x-ray studies in only 13 of the cases, the percentages compare very favorably with those of Caldwell and Moloy⁽²⁾, who used x-ray in several hundred cases. I do not know how to explain the greater variation of the positions in my cases, except that x-ray diagnosis is more accurate.

Before going into a discussion of the forceps groups, I would like to review the interesting statistics compiled by Dr. H. C. Miller⁽³⁾ of the Pediatric Department of the

Yale Medical School, and presented to the American Congress on Obstetrics and Gynecology, at Cleveland, last September.

Total Mortality (Stillborn and Neonatal)
According to Method of Delivery
(Miller)⁽³⁾

Type of Delivery	Fullterm and Premature (7 mos. or more)			Fullterm Only		
	Total Births	Total Fetal Mortality	Per Cent	Total Births	Total Fetal Mort.	Per Cent
Spontaneous	1844	43	2.3	1710	16	0.9
Low forceps	580	8	1.3	557	3	0.5
Mid forceps	200	10	5.0	191	9	4.7
High forceps	19	2	10.5	17	1	5.8
Breech extraction	76	14	18.3	58	10	17.2
Version-extraction	76	25	32.8	63	20	31.7
Cesarean section	415	25	6.0	365	7	1.9
Total	3210	127	3.9	2961	66	2.2

Upon analysis one finds that the baby delivered by low forceps has a better chance of survival than the baby delivered spontaneously. Note that if only fullterm infants are considered, there is little difference between the spontaneous, low forceps and cesarean mortality. Note the extremely high mortality in the breech group, and in the version group.

TABLE 3

Forceps deliveries	73 (76%)
Outlet	60 (82.2%)
Prophylactic	47
Low	13
Mid	9 (12.3%)
After-coming head	4 (5.5%)
Mid-forceps group	9
(a) Low mid-forceps	6
Transverse arrest in low midpelvis	4
Occipito-anterior arrest in low midpelvis	1
Occipito-posterior arrest in low midpelvis	1
(b) Mid-forceps	2
Transverse arrest in midpelvis	2
(c) High mid-forceps	1
Transverse arrest in high midpelvis	1

Outlet Forceps (Prophylactic and Low)

Forty-seven forceps deliveries were classified as prophylactic and 13 as low. Many obstetricians prefer to call the entire group the low or outlet forceps deliveries. Others make a differentiation. In a low forceps delivery the head is at a slightly higher level and requires slightly more effort for delivery than in a prophylactic forceps delivery. DeLee⁽⁴⁾, who introduced the term

1. Walsh, John G.: Stereoroentgenography of 400 Pelves With Clinical Correlation, Am. J. Obs. and Gyn. 39:255 (February) 1940.

2. Caldwell, W. E.; Moloy, H. C., and D'Esopo, Anthony D.: A Roentgenologic Study of The Mechanism of Engagement of the Fetal Head, Am. J. Obs. and Gyn. 28:824 (December) 1934.

3. Miller, Herbert C., in Western Journal of Surgery and Obstetrics and Gynecology 48:13.

4. DeLee, Joseph B.: The Principles and Practice of Obstetrics, ed. 6, Philadelphia, W. B. Saunders Company, p. 1047; The 1938 Year Book of Obstetrics, Chicago, Year Book Publishers, p. 295.

"prophylactic forceps" in 1920, describes it as "... easily lifting the head out when it has come down onto the perineum. . . and it is associated with an episiotomy which is done when the head begins, just begins, to part the pillars of the levator ani; then and not before, or long after, an episiotomy is performed—in depth varying with the estimated size of the baby."

Prophylactic forceps and episiotomy are employed: (1) to prevent destruction of the fascial and muscular support of the pelvic floor and bladder, and of the supporting structures of the uterus; (2) to prevent the nervous and physical exhaustion produced by a prolonged second stage; (3) to decrease postpartum bleeding from a tired uterus; (4) to reduce the time the baby's brain is under pressure⁽⁴⁾.

Schreiber⁽⁵⁾, a neurologic surgeon, has shown that cerebral asphyxia (oxygen deficiency) at birth may cause permanent degenerative changes in the brain. Surely this warning should be foremost in the mind of every obstetrician as he follows labor through and prepares for delivery.

Mid Forceps

There were 9 cases classified as mid forceps deliveries. Upon analysis one finds that only three of these cases are mid forceps in the true meaning of the term.

Transverse arrest of the fetal head (failure of the head to rotate to the anterior position), requiring forceps rotation occurred 7 times—4 times in low midpelvis, twice in midpelvis proper, and once in high midpelvis. Correction was as follows:

(1) Rotation was accomplished easily in the low arrest group by use of the Barton forceps, after which delivery was completed with outlet forceps.

(2) One case of an arrested anterior position in low midpelvis required axis traction forceps for delivery. The head was held up by an abnormally prominent coccyx, which had to be snapped. Delivery was easy after this was done.

(3) Arrest in low midpelvis in the occipitoposterior position occurred one time, in an anthropoid type of pelvis. The Scanzoni "double application" of forceps was employed, using Tucker McLane smooth blade forceps for rotation, which was accomplished after traction to a lower level, and delivery

was completed after reapplication of the blades. Another case of persistent occipitoposterior position, occurring in an anthropoid pelvis, was delivered *as such*, with prophylactic forceps. In this case, the head descended onto the perineum in the posterior position, where attempted manual rotation was unsuccessful. Delivery in the posterior position was easy. Both these cases are typical of the mechanism one has to follow in delivery through the anthropoid pelvis to avoid trouble.

Bill, of Cleveland, has modified the Scanzoni technique, in that he rotates through a wide arc without traction.

Caldwell and Moloy⁽⁶⁾ have pointed out that in the android pelvis, if converging side walls or a backward sacrum exists, arrest in the occipitoposterior position may occur. One should try manual rotation to the transverse position, then apply Barton forceps, and complete rotation *only* after bringing the head to a lower level, or at times elevating it to a higher level.

Two cases of low transverse arrest were rotated manually, and then delivered by low forceps. Some obstetricians are quite expert at the art of manual rotation. Dr. Harry Mayes, of the Methodist Episcopal Hospital in Brooklyn, N. Y., is quite adept at rotating with one blade of the forceps combined with manual rotation. I used this technique successfully in one case of the series. However, in the low transverse arrest it has been my experience that rotation can be accomplished more easily and more completely with Barton forceps than manually. Manual rotation not infrequently results in incomplete rotation. I want to emphasize the fact that in the low arrest cases I have not found that the Barton forceps causes damage to the maternal soft parts. On the other hand, the higher the level at which forceps are necessary, the greater the chance of injury to the maternal soft parts, and to the fetus.

The two cases of transverse arrest in midpelvis proper were rotated with Barton forceps, after traction to a lower level, and delivery was completed with axis traction forceps. It should be emphasized that if arrest occurs in the android pelvis, it is very important to maintain the transverse position to a lower level before rotating.

(3) The one case of transverse arrest in

5. Schreiber, Frederic: Apnea of the Newborn and Associated Cerebral Injury, J.A.M.A. 3:1268 (October 1) 1938.

6. Caldwell, W. E.; Moloy, H. C.; D'Esopo, Anthony D.: Studies On Pelvic Arrests, Am. J. Obs. and Gyn. 36:928 (December) 1938.

high midpelvis was delivered after a forty-four hour labor. A poor application of forceps (Barton and Haig-Ferguson axis traction) was obtained and delivery was very difficult. The baby had an intracranial hemorrhage and died on the third day of life. An acute upper respiratory infection and also an acute upper abdominal distention (necessitating Levine tube drainage) developed during labor.

It should be remembered that not all mid forceps deliveries are due to the bony pelvis. Caldwell and Moloy⁽⁶⁾ state that one mid forceps delivery in three will occur when the pelvis itself is adequate in size.

High Forceps

There were no high forceps deliveries in the series. High forceps should rarely be employed. Cesarean section or version and extraction have almost replaced its use. A floating head definitely contraindicates the use of forceps.

Forceps in Breech Delivery

Piper's after-coming head forceps were used in four of the five breech deliveries of the series. Unless Mauriceau's maneuver is easily successful, it is a good rule to apply Piper's forceps. In doing so it is important to be sure that the head has rotated from the transverse position and that the cervix has not been caught by the blade. Always guide the blade with the fingers.

I believe that the use of after-coming head forceps in breech delivery definitely lowers the mortality.

Barton Forceps

As has been repeatedly stated, this forceps has been used whenever rotation from the transverse position was necessary. It is not a new instrument. The anterior blade has a flexible "wrist" which is curved to fit behind the symphysis as well as over the upper side of the face, and it is applied by inserting it posteriorly in the vagina and rotating it upward and over the head, slipping it over the occiput or over the face. The posterior blade has a wide fixed curve which is pelvic and cephalic in its adaptation to the sacral curve as well as to that of the fetal head. In introducing the posterior blade it is best to direct it so that it will not impinge on the promontory of the sacrum. An axis traction bar may be attached for use when-

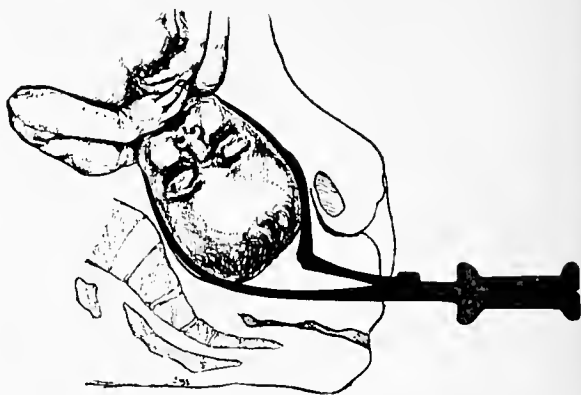


Fig. 1. Barton's Forceps. (Courtesy W. B. Saunders Co., publishers, "Principles and Practice of Obstetrics", ed. 6, by Dr. Joseph B. DeLee.)

ever rotation at a lower level is indicated. At times this becomes extremely valuable. If proper care is taken, damage to the urethra or peri-urethral tissues will usually not occur. When rotation is complete, the Barton forceps has accomplished its one and only purpose and is usually removed. The instrument was devised by Barton, of Plattsburg, N. Y., who was encouraged and further advised in its development by Caldwell and Studdiford at Sloane Hospital for Women in New York City.

Some operators prefer Kielland forceps to correct a transverse arrest. Still others prefer version and breech extraction, or a pelvic application of forceps to the oblique or transverse position. It would seem that this latter technique should now be replaced by use of forceps such as Barton's or Kielland's, since the cephalic application to the fetal head they provide is a much safer application for the baby.

Haig-Ferguson Axis Traction Forceps

The forceps used for axis traction has been the Haig-Ferguson. Actually it is a Simpson type forceps with an axis traction bar. This forceps likewise is used almost exclusively at Sloane Hospital and also at New York University (Bellevue) whenever axis traction is necessary. The head should always occupy the anteroposterior diameter of the pelvis before this forceps is applied. It is light and can be handled with ease. It can be used as a low, mid or axis traction instrument. The principle of the axis traction forceps is that of applying forceps to the head along a line parallel to the axis of the pelvis; this principle should never be lost

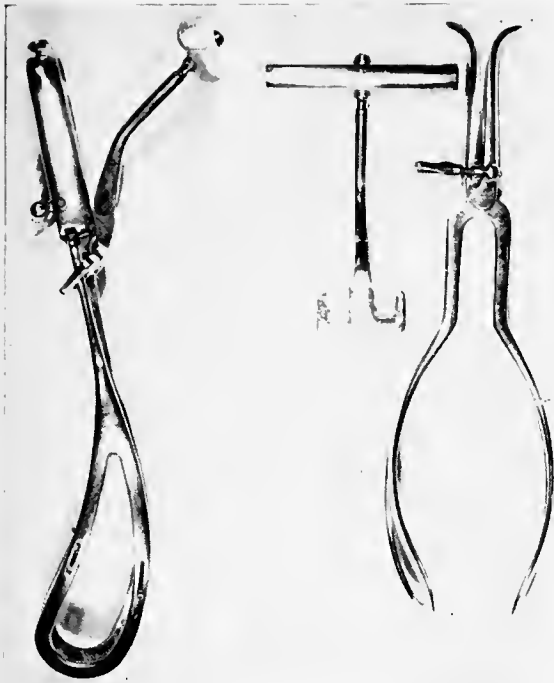


Fig. 2. Haig-Ferguson Forceps.

sight of during forceps delivery. Even in a low forceps delivery, the handle of the forceps should be elevated only after the head is partially through the subpubic arch.

Additional Factors To Be Considered in Forceps Delivery

There are many other factors of practical importance involved in forceps delivery. Any standard textbook on obstetrics will discuss these factors in detail. Here I shall stress only six:

(1) The cervix should be fully dilated before the use of forceps is attempted. A differentiation should be made between full dilatation and non-retraction of the lips over the fetal head; correcting the latter is not manual dilatation. However, occasionally even manual dilatation becomes necessary. Many of the bad results in obstetrics are due to attempts to terminate labor before full dilatation. "In Bill's opinion, the cervix has been the cause of more stillbirths than has the bony pelvis."⁽⁷⁾

(2) Catheterize the patient, if possible, before attempting delivery.

(3) Be sure of the correct position before applying forceps. Failure to do so may result disastrously for the baby, or produce

severe injury to the maternal soft parts. If not positive about the fontanels, palpate the ear. Don't forget the importance of x-ray diagnosis of position.

(4) The forceps that slips is not well applied. When undue force is required, it usually indicates a mistake in judgment, or in diagnosis of position; the wise obstetrician will remove the blades and make a further examination.

(5) A good anesthetic is important. As the baby is actually being born, discontinue the nitrous oxide, or ether, and give only oxygen. Continue this as long as the cord pulsates.

(6) Fetal distress should be relieved by relaxation and oxygen rather than by traumatic delivery. Check the fetal heart after each traction. Always take plenty of time for delivery!

Indications for Forceps

It is sufficient to say that forceps are indicated whenever the condition of the mother, or the baby, or both, warrants intervention. Frequently the decision is a test of obstetrical judgment. Naturally a woman exhausted from a long labor, or a baby in distress is a definite indication for help. However, the modern obstetrician, if he is to be more than a midwife, endeavors, in so far as it is possible, to anticipate these dangers and to prevent them. Too often when signs of danger to the mother or baby are present, the real damage has been done.

How long should one wait, after the head has reached the perineum and progress has ceased, before applying forceps? Most obstetricians accept the rule that failure of the head to advance after being on the perineum for thirty minutes to one hour—or two hours (occasionally longer) if at a higher level in the pelvis—constitutes an indication for forceps delivery. Obviously, however, there can be no fixed time limit.

What about the free use of analgesics and anesthetics now so generally employed, and admittedly responsible in many instances for delay late in the second stage sufficient to require delivery by low forceps? Dr. Paul Titus of Pittsburgh says: "I am convinced . . . that a labor and delivery made painless by such measures is far preferable, and contributes much more to the mother's smooth recovery, her resistance to infection, avoidance of hemorrhage, and her ability

7. DeLee, Joseph B.: The 1938 Year Book of Obstetrics, p. 295.

subsequently to nurse her baby, than the older procedure of a spontaneous but consciously painful labor and delivery."⁽⁸⁾ Dr. Titus has expressed my sentiments exactly!

Finally, in the use of forceps, as in all other phases of obstetrics, one should follow the golden rule of obstetrics—namely, deliver the other fellow's wife as one would want his own wife delivered.

Summary

A series of 100 consecutive unselected viable births, from private practice, has been presented.

Forceps were used in 73 cases out of 96 vaginal deliveries. This constitutes a forceps percentage of 76 per cent. When the indication for forceps delivery exists, the obstetrician should select the proper forceps, and should have a thorough understanding of the technique involved in its use.

S. Titus, Paul: *The Management of Obstetric Difficulties*, p. 567. St. Louis, C. V. Mosby Co., 1937.

Abstract of Discussion

Dr. Lance Monroe (Concord): This paper by Dr. Jones lends itself to a variety of phases for discussion. In Dr. Jones's series one of the two fetal deaths occurred in a premature infant delivered spontaneously; and in the statistics cited from the Yale Medical School, the lower mortality rate in the group delivered by low forceps, as compared with the group delivered spontaneously, is largely due to the difference in the premature group. In doing 38 autopsies on premature and stillborn infants from the Obstetrical Service of Bellevue Hospital, in which the vast majority of cases showed arachnoid hemorrhages or subventricular hematomas, I was impressed by the fact that in 32 of these 38 deaths, the lesions occurred following spontaneous vertex delivery. The pathology of these cases, and the mechanism by which the hemorrhage occurs, need not be gone into here, but have a practical application in the management of the second stage of labor. During this period it is possible to shorten the process and to reduce the forces to which the premature infant is exposed, particularly in the primiparous patient. As shown by Studdiford, Salter, and others, delivering the fetus by low forceps and episiotomy results in a marked reduction of intracranial injuries in the premature infant. Prematurity is often another indication for the use of forceps.

I was glad to hear that Dr. Jones uses the Barton forceps. In Bellevue Hospital from July 1, 1934, to July 1, 1937, the Barton forceps was used almost exclusively on all transverse positions. We believed it to be the forceps of choice whenever rotation from the transverse position was necessary. Remember the Barton forceps must be applied only in the transverse position. The head is brought through the pelvis in this position, and the rotation should not be done until the head is on the perineum. Stereoscopic x-rays by Caldwell and Moloy have certainly shown that in the majority of cases the head enters the pelvis in the transverse position. In the gynecoid pelvis, with the head in the trans-

verse, the most available room is being utilized. In the android and platypelloid groups, the Barton forceps is the ideal choice. Here the head has to descend in the transverse position to a low level before rotation takes place. In these types of pelvis, when the anteroposterior diameters are shortened, or where there is a decreased (what Caldwell and Moloy call) posterior sacro-spinous portion of the inlet, it is necessary to utilize fully the posterior pelvic capacity, and this is best done by the correct traction with Barton forceps, where the head is first carried backward and downward, and then hugs the sacrum on its way through the pelvis.

Posterior positions occur chiefly in two architectural types of pelvis. In the android and platypelloid groups, when a posterior position occurs, owing to prominent ischial spines, converging side walls, or a backward sacrum, manual rotation to the transverse position, and then descent with Barton forceps more closely resembles what takes place in the normal pelvis. In the other group—namely, anthropoid pelvis—, where the width is decreased and the anteroposterior diameter increased, when posterior positions occur they can be delivered by manual rotation to the transverse position and application of Barton's forceps, because luckily these pelvis are usually large; however, it is in this type that the Kielland forceps is valuable. It is usually preferable to bring the head down in the posterior position with Kielland forceps, and rotate on the pelvic floor; however pushing the head up, and rotating to the direct anterior position above the inlet of the pelvis, and descending in the anteroposterior diameter, will often give excellent results. This type of case in anthropoid pelvis is the only one in which rotation above the inlet as an initial procedure should be done.

I recall three cases of high transverse arrest where Barton's forceps were applied and the head could not be brought into the pelvis. In two of these Kielland forceps were then applied, and after rotation to the direct occiput anterior position, delivery was successfully accomplished with only moderate difficulty. These pelvis were studied by x-ray postpartum and found to be anthropoid in type, a fact which had not been recognized clinically before delivery. In the third case, delivery was completed by Kielland forceps after failure of Barton's, mainly because more traction was made. The infant was stillborn, and x-ray subsequently showed an android-flat pelvis. We all see failure of forceps on high heads, following which version and breech extraction are done successfully. In stressing the bony pelvis, one must not lose sight of all the other factors which determine the final outcome.

I have not had sufficient experience with the Scanzoni maneuver or Bill's technique to judge their relative value in posterior positions. I believe that in the direct occiput posterior position low in the pelvis delivery is best accomplished as such with the ordinary forceps and wide episiotomy.

Other points in the use of Barton forceps, besides those mentioned, are: (1) The anterior blade is more easily rotated over the face than over the occiput; (2) in high transverse arrests, because of an asynclitic head, care must be taken with the hinged blade to secure a proper application; (3) when applying the posterior blade the small posterior cuff of cervix which is always there must be flipped out of the way with the fingers; (4) the direction of traction is different from that used with other forceps, and must be practiced and mastered; (5) the axis traction bar can be dispensed with; (6) delivery can be completed with the forceps after rotation.

A word about the Haig-Ferguson forceps. It is essentially a short, light, Simpson forceps with a

French lock and an excellent traction bar. It is easily maneuvered. It has the advantage of parallel shanks, and a wide cephalic curve which insures against pressure on vulnerable parts of the head. As mentioned by Dr. Jones, it is the instrument used in Sloane and Bellevue Hospitals, on most anterior positions when axis traction is necessary.

Dr. G. W. Johnston (Wilmington): I want to thank Dr. Jones for his excellent paper. He is certainly to be congratulated upon the results which he has obtained.

It is taking unfair advantage of Dr. Jones to discuss a specialist's paper from the standpoint of a general practitioner. If you are equipped as Dr. Jones is in his hospital and also in his training, I think his use of forceps is an excellent procedure to follow; however, if the general practitioner uses forceps as frequently as he has, he will get some disastrous results both for the baby and for the mother.

Back in 1922 or 1923, when DeLee and Potter were putting all the emphasis on forceps and versions, DeLee made the statement that both he and Potter had killed a tremendous number of babies.

We have to have these Barton forceps and Kielland forceps on hand, but I would certainly not use them the first time on a difficult case. You had better use the forceps you are accustomed to, and try these new forceps out on some easy cases.

Unless you are in a hospital—if you are simply depending upon a midwife and your own brain and your own hands—, it is better to reserve forceps for an emergency. If you do not give the patient quite as much anesthetic and let her help you out, you will probably get better results.

Chairman Tayloe: Is there any further discussion of Dr. Jones's paper? If not, we will ask Dr. Jones to close the discussion.

Dr. Jones: I agree with Dr. Johnston's discussion. Not only do I sympathize with the general man out in the rural sections, but I have the greatest admiration for him. He works under great difficulties.

I think it is true, however, that there are a large number of men who are doing work in hospitals in the larger towns and even in our cities who perhaps could avail themselves of the opportunity to use, on occasions, these various types of forceps discussed.

Squibb Offers Lygranum For Diagnosis of Lymphogranuloma Venereum

Believed to be third in prevalence among the venereal diseases, following syphilis and gonorrhea, the importance of lymphogranuloma venereum is becoming more generally recognized. Differential diagnosis is often difficult. Clinicians will, therefore, welcome a new Squibb antigen, Lygranum, which permits differential diagnosis by means of the Frei test. It is much purer and much more potent than any antigen hitherto available for this purpose.

Lygranum is prepared by growing the organisms causing lymphogranuloma venereum in the egg yolk sac of the developing chick embryo by the method developed by Rake, McKee and Shaffer of the Squibb Institute for Medical Research. By differential centrifugation the organisms are obtained as practically pure virus. This virus is then suspended in 0.1 per cent formalin. Lygranum is distributed in a dilution which has been found by actual clinical trial to be suitable for the skin test. All lots are tested on known cases of lymphogranuloma venereum before being released for distribution.

MENTAL HYGIENE IN NORTH CAROLINA

HUBERT B. HAYWOOD, M.D., F.A.C.P.

RALEIGH

Mental hygiene and mental health are synonymous terms, and are part of the same program as physical health. There is no dividing line. For the first time in history man is making an intelligent effort to solve the problem of mental disorders. This is a problem which involves the most fundamental issues of human life and happiness.

We have an increasing number of mentally ill in North Carolina. Until now our effort has been to give them institutional care, and but little concentrated or directed effort has been made to eradicate mental sickness at its very beginning. In North Carolina there are practically no mental hygiene clinics, child guidance clinics, or psychiatric case workers. Our State hospitals for the insane are undermanned with physicians, trained workers, nurses and attendants. Our central hospital has approximately six physicians for 2500 patients. A hospital for the insane approved by the American Psychiatric Association has one physician for every 150 patients. In 1933 only five states in the Union had a greater ratio of patients to personnel than North Carolina. Our state's average was 10.8 to 1, while in the United States it was 6.6 to 1. In 1934 the average in the United States was 252 patients per physician, while in North Carolina it was 528 per physician. North Carolina stands about forty-fifth in the rank of states in per capita expenditure for patients. It allows about \$250.00 annually per patient. There should not be over 40 annual admissions per physician to a state hospital. In North Carolina it averages 138 a year for each physician. North Carolina is spending more than a million dollars annually on the maintenance of charitable institutions devoted to mental health. As you may easily discern, the time and efforts of the staff of our psychiatric hospitals are necessarily devoted to the care and treatment of mental cases. Preventive work is impossible, since funds and physicians are not available. For every dollar spent for treatment and care of mental cases an equal amount should be spent for prevention.

In 1939 the Division of Mental Hygiene

Read before the meeting of the North Carolina Mental Hygiene Society in Greensboro, November 1, 1940.

of the State Board of Charities and Public Welfare was reorganized along psychiatric lines. It now has a director and an assistant director, both of whom are psychiatrists. The assistant director came to the Division in 1939 as director of the Children's Unit, which acts as a child guidance service to the thirty or more counties of the state which participate in the Child Welfare Services. Some of the functions of the division are the stimulation of interest in the development of Mental Hygiene Clinics, the improvement of the mentally ill and mentally deficient, the inspection of institutions, and the extension of psychiatric services within certain limits on an individual basis. This in brief is the sum total of the organized effort to prevent mental diseases by the state of North Carolina. Approximately four cities in North Carolina now have mental hygiene and child guidance clinics supported by private benefactions. Only two physicians are provided by the state for a population of 3,500,000 people.

The great prevalence of mental disease is a public health problem and recognized preventive measures should be instituted. The latest census shows that the United States has a population of 131,409,881. Of this number 45,000,000 live below the safety line because they are not getting the kinds and amounts of food necessary for health. In 1934 there were 201 cases diagnosed as pellagra in our state mental hospitals. They cost the state \$33,805 yearly for maintenance. Pellagra rarely develops in state institutions today. Psychotic symptoms develop before admission. The prevalence of dementia praecox alone, and its cost to society not only in dollars and cents, but in loss of human values, make it one of the very biggest public health problems. The degenerated dementia praecox cases form the bulk of the chronic mental cases in our institutions. Sixty per cent of the readmissions to our state hospitals are due to dementia praecox and manic depressive psychosis. At the Maryland State Hospital 47.6 per cent of first admissions are classified as dementia praecox, and of readmissions this disease accounts for 56 per cent. In our state 145 out of 1000 new admissions at the Goldsboro Hospital were dementia praecox cases; at Dix Hill there were 182 cases out of 847 admissions; and at Morganton, which takes

only mentally diseased patients, among 552 admissions, 166 were dementia praecox patients. This is almost one out of every three patients. Early diagnosis and early admission to a mental hospital for treatment means a shorter duration of stay. Over half of the patients admitted to mental hospitals have been ill for a year or more before admission. Sixty and seven tenths per cent of first admissions are discharged. Of those discharged 79.5 per cent were diagnosed on admission as having psychosis, 21.5 per cent as not having psychosis. Of those with psychosis 42.6 per cent were discharged as recovered, 51.1 per cent as improved, 6.3 per cent as unimproved. Patients with psychoneurosis and psychopathic personality form 2 per cent of the total of the state's hospital population. Ample out-patient departments should help remedy this. The proportion of inebriates in our hospital population is higher than in other states. The number of mentally deficient patients in our state hospitals is relatively small.

Sterilization is most directly indicated in the presence of mental defects. It is the mentally defective and to a less extent the mentally diseased who should be considered for sterilization. A few familial diseases of the central nervous system should also be considered as cause for sterilization. Many cases of mental retardation are due to injury or disease and are not attributable to heredity. Syphilis furnishes a certain percentage of such cases, rather small for the white and large for the colored inmates in North Carolina asylums. This problem is now being vigorously attacked by the State Board of Health. Three hundred and fifty individuals have been sterilized in the state in the last two years. The number is too small. If we accept the intelligence quotient of 70 as an index of mental deficiency, it is estimated that we will find 58,549 mentally handicapped children in the public schools of North Carolina. Maladjustment in school and in life is inevitable in this group, which comprises about 5 per cent of the children in the state. There is no definite or special provision for the defective in the state school program. This fact contributes to his delinquency; many of these juvenile delinquents come into the courts. In the public schools of North Carolina a total of 240,288 children failed to pass. This was 26.9 per cent of the total enrollment. The total expendi-

ture per child was \$30.00. Over \$7,000,000 in 1934-35 was expended for grade repeaters. There are no public school child guidance clinics.

Farm tenancy in North Carolina has decided mental hygiene aspects, due to low family nutritional levels, overcrowding in inadequate and unsanitary houses, poor school attendance with frequent changes of school and consequent grade loss. This leads to truancy and delinquency. Ten per cent of this class are illiterate and furnish citizenship of a low moral and intellectual level whose emotional outlets become narrow and restricted, leading ultimately to mental disease. Nutritional diseases with psychopathic degeneration are also prevalent among this class.

I have thus tried to discuss briefly some of the fundamental causes of mental disease in North Carolina. The efforts of the State Educational Department, the Prison Parole Commission, the nutritional specialists of the Agriculture Department, the county and State Health Department, the State Welfare Department, and the State Mental Hospitals should be coordinated under one acting head for the improvement of mental health. In the field of public health, where prevention is the keynote, the great progress made in combatting tuberculosis has not come from the discovery of the specific cause or from specific treatments, but from preventive treatment and early care. Here lies the key to a practical means of stemming the rising tide of mental hospital commitments in North Carolina. The successful fight to conquer pulmonary tuberculosis furnishes the outline of a campaign to combat mental disease. Where such a plan has been tried brilliant results have been achieved. In 1934 three mental hospitals in the state of New Jersey conducted 560 mental hygiene clinics. Diagnoses and treatments numbering 3,962 were extended to 2,374 patients. In about 70 per cent of the cases it was possible to avoid institutional treatment. Early diagnosis of maladjustment in a patient's environment and the administration of treatment necessary to help him adjust himself took care of most of these cases.

North Carolina is thus provided with a plan of procedure for the diagnosis and care of mentally diseased patients. There is a need for community service supporting this work. Every sizable community should pro-

vide special clinic service, with at least part time employment of competent psychiatrists, psychologists and workers trained in mental hygiene. Then when a parent or teacher refers a child who is not adjusted to his surroundings, careful instruction can be given as to the best method of handling the particular problems presented. Frequently, particularly with behavior disorders, the problem is found in the family situation and not with the child himself. Many a child develops delinquent or criminal tendencies because he is not understood by those responsible for him, and does not have an environment suitable for his needs. One psychiatric social worker can supervise a minimum case load of 75 mental patients in their own communities. A trained psychiatric social worker will cost the state or county from \$2,000 to \$3,000 a year, whereas the maintenance of 75 patients in a state or county mental hospital will amount to \$40,000 or \$50,000 a year.

Summary

1. The mental hospitals in the state could be expanded into modern institutions of the latest type with little additional cost.

2. There should be an increase in the psychiatric social service or follow-up field work so as to enable mental hospitals to parole a greater number of patients who can be safely adjusted in the community.

3. There should be a continued extension of mental clinics based on the mental hospitals and the State Welfare Department to serve communities in the diagnosis of mental and nervous disorders, and to reach potential sufferers from these disorders before the definite breakdown occurs.

4. There should be formulated a working plan for the guidance of school teachers, nurses and medical officers which will enable them to note evidences of nervous and mental instabilities and to direct suitable cases to the nearest psychiatric clinic where advice and preventive treatment may be secured.

5. Local communities should be encouraged to develop psychiatric departments for mental and nervous patients as part of the local general hospitals. Such a psychiatric department connected with a general hospital would be valuable as a "first aid station". It would be suitable for nervous patients who feel the need of special care,

but who are unwilling to go to a public hospital for the insane. Medical specialists in mental diseases, psychiatrists in the local communities or from state or county hospitals could act as consultants to these psychopathic departments of general hospitals.

North Carolina's efforts to ensure mental health are inadequate. A well directed program is a necessity. I have drawn freely on the work of earnest and competent psychiatric and lay investigators in North Carolina and other states. The figures presented by me are of necessity, in many cases, only approximate. However, we may extract truths from these facts which will serve as a firm foundation for the structure of mental health in North Carolina.

THE THERAPY OF DEFICIENCY STATES

FREDERIC M. HANES, M. D.

Professor of Medicine

Duke University School of Medicine

DURHAM

It was believed until a few years ago that the animal organism would grow and thrive on sufficient quantities of proteins, carbohydrates and fats. Gradually, however, it began to dawn on students of nutrition that other substances, now known as accessory food factors, were absolutely essential to the health and well being of the body. It has been known for a long time that a number of *inorganic* substances, such as iron, calcium and phosphorus were essential dietary constituents, but the concept of certain mysterious *organic* substances, lack of which would cause serious pathologic conditions, was clearly formulated by Hopkins of England in 1906, in a statement so accurate and prophetic that it will be quoted here.

"No animal can live upon a mixture of pure protein, fat and carbohydrate, and even when the necessary inorganic material is carefully supplied, the animal still cannot flourish. The animal body is adjusted to live either upon plant tissues or other animals, and these contain countless substances other than the proteins, carbohydrates, and fats

... The field is almost unexplored, only it is certain that there are many minor factors in all diets, of which the body takes account. In diseases, such as rickets, and particularly in scurvy, we have had for long years knowledge of a dietetic factor, but though we know how to benefit these conditions empirically, the real errors in the diet are to this day quite obscure... Scurvy and rickets are conditions so severe that they force themselves upon our attention, but many other nutritive errors affect the health of individuals to a degree most important to themselves, and some of them depend upon unsuspected dietetic factors."

Funk coined the name "vitamin" in 1912, and during the past two decades, and more especially during the past ten years, our knowledge of the number, importance in nutrition and, finally, the chemical structure of vitamins has been enriched by some of the most brilliant and difficult researches in the history of medicine. This knowledge of vitamins is available to all in the current literature, where excellent discussions of the sources, indications for their use, dosages, etc., have appeared recently⁽¹⁾. It is not my purpose in this brief paper to attempt a restatement of facts which are easily accessible, but I believe you share my own interest in the newest phase of the subject—namely, something of the chemical nature of some of the vitamins and their mode of action in the body's metabolism.

A few general statements may be made in regard to vitamins:

1. A vitamin is a chemical compound which, like the enzymes, acts as a catalyst in metabolic processes. Some of the vitamin is lost in the course of its activity, and hence it must be replaced daily.

2. Enzymes and hormones are produced by the cells of the body—they are endogenous in origin; whereas vitamins are not produced by the cells of the body, but they, or their precursors, must be supplied from without—they are exogenous in origin. The recognition of this fact is essential to an understanding of deficiency states, and guides our treatment of these conditions.

3. Vitamins, when acting as enzymes, are always attached to a specific protein, and the needed vitamins vary in different species.

For example, scurvy cannot be produced in the dog or rat by a deficiency of vitamin C in the diet.

4. In the presence of a deficiency, vitamins are very potent and act with astonishing rapidity, but once the deficiency is supplied, an excess of the vitamin is therapeutically useless, though not actually harmful, except in very large amounts.

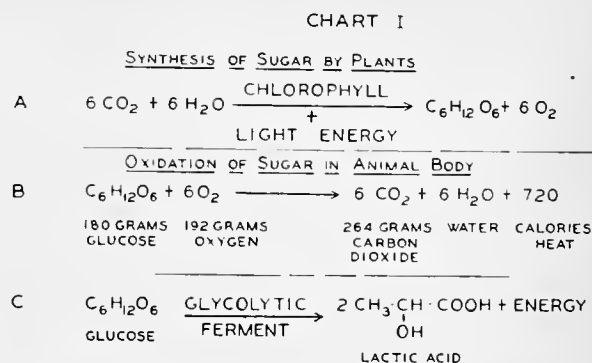
5. It is probably true that all deficiency states are associated with multiple vitamin deficiencies, and, as a corollary to this, we may conclude that the natural sources of the vitamins are to be preferred, where they can be employed, to the synthetic compounds, except for reinforcement and emergency use.

6. Deficiency states are by no means always the result of poverty; dietary idiosyncrasies, food faddism, ill-advised reducing diets, pregnancy, etc., may produce deficiencies in the presence of plenty.

Of the ten vitamins whose chemical structure is established (A, B₁, C, D, E, B₂, B₆, nicotinic acid, K, pantothenic acid) the physiological action of four has been correlated with a known structural arrangement of the vitamin when acting as an enzyme. These are vitamin A, and three of the components of the B complex—namely, riboflavin, nicotinic acid and thiamin. In the brief time at my disposal certain physiologic actions of these four will be considered.

The normal functioning of the cells of the body, and ultimately their lives, depend upon access to and proper utilization of food. The basic food-stuff of the body is glucose, and it is well known that both fats and proteins can be transformed into glucose in the body's metabolism. It is of the greatest interest, then, to find that the B complex, whose function until recently was shrouded in mystery, seems intimately concerned with the all important metabolism of glucose. It is probable that the B complex has other functions⁽²⁾, but time does not permit of their consideration.

In discussing sources of energy in cells it may help if we approach the subject in a very elementary manner. Chart I A illustrates the synthesis of starch or sugar by the plant cell. The sugar (or starch) molecule now contains within it stored potential chemical energy which is released in the animal cell in the over-all oxidation reaction



illustrated in Chart I B. One gram of sugar burned yields 4 calories of energy. This energy is used to perform the work of the cells, tissues, and organs of the body as a whole, and to maintain the body temperature. There is constant dissipation of all of this energy, mostly as heat, and to maintain the supply of available energy the oxidation process must go on continuously. But the over-all oxidation reaction which occurs in a bomb calorimeter, or in an efficient burner, cannot take place directly in living cells. In the cells of the body this reaction is accomplished in many complicated steps involving the participation of many organic catalysts, or oxidative enzymes. Some of these enzymes are known to be complex systems, containing definite organic groups attached to a protein: the vitamins of the B complex—B₁ (thiamin), B₂ (riboflavin), and nicotinic acid—are known to function as components of some of these oxidative systems.

Starting with glucose as the ubiquitous source of energy, it is known that most cells have the ability of splitting, with the aid of a ferment, one molecule of glucose into two of lactic acid, anaerobically, with the liberation of a small amount of energy which is used in muscle cells (Chart I C).

Charts II and III illustrate without further description the manner in which nicotinic acid, riboflavin and thiamin are believed to enter into the oxidation of lactic acid and pyruvic acid. The chemical configuration of the vitamins nicotinic acid and riboflavin, when acting as enzymes, is shown in Charts IV and V. Thiamin pyrophosphate is necessary for the decarboxylation of pyruvic acid, and in thiamin deficiency states it has been shown that pyruvic acid accumulates in the blood. In the oxidation of lactic acid, then, there is needed a nicotinic acid derivative

2. Bernheim, F.: Integration of Vitamins and Drugs with Cell Catalysts. J. Lab. and Clin. Med. 26:20 (October) 1940.

It is obvious from this brief and admittedly inadequate discussion that the role of some of the vitamins is rapidly being elucidated, thus placing the therapy of deficiency states on a much more exact basis.

PUBLIC HEALTH WORK FOR THE YOUNG DOCTOR

GEORGE M. COOPER, M. D.

Assistant State Health Officer

RALEIGH

In the language of the old time essayists in every medical society meeting in the land, this sketch might be considered a "plea" for more competent young physicians to enter the field of public health as a life work. The State Board of Health today is having more difficulty than it should in getting competent young physicians in active life to take the necessary training in order to qualify as county and city health officers and as members of the staff and what might be called the sub-staff at the central office in Raleigh.

It is understood that now as in the past—and we fervently hope in the future—the local authorities will continue to hold the power and responsibility for the election of local city and county health officers. However, the local authorities must be assured from a competent impartial agent such as the State Board of Health that the man they employ meets certain definite requirements and is competent in every way to discharge the increasing duties of health officer.

The State Board of Health has been criticized occasionally in the past for recommending physicians who have been born and reared and educated outside of North Carolina, and who, before they can assume the duties of health officers, must be granted license by the North Carolina Board of Medical Examiners. The State Board of Health would naturally prefer to recommend young men for such places who have been educated in the history and traditions of this state, and who would naturally be better qualified to understand the needs of the people they serve. The State Board of Health wishes to see such places filled largely by the highest type of young North Carolinians who are thoroughly trained as physicians and qualified as health officers, and who have the best years of life before them. Unless an

increasing number of the state's young medical men become interested in public health as one of the important and desirable specialties of medicine, it will be necessary for the State Board of Health to continue to accept a considerable number of applications from qualified young physicians outside the borders of the state.

Public Health is one of the youngest specialties in medicine, but at the present time it is rapidly becoming one of the most important and one of the most desirable to a young man who wishes to serve the people of the state in a capacity which will build a name for himself and his family in the city or county in which he may cast his lot. The public health profession is rapidly coming to be highly respected by the people as a whole. A conscientious young physician of clean mind and clean life can exert a wonderful influence for good in any county or city in the state if he will devote his life to such service.

With the advent of the merit system, in which very soon no physician over 35 years of age will be admitted to public health service, and in view of the expected action by the present Legislature to establish a retirement system for all State employees covered by the merit system (which will include county and city health officers who participate financially in Government funds, as nearly all of them do at this time), the positions will be more secure and free from political interference.

The need for such officials is here now, and will become greater during the next two or three years as the remaining counties become organized and as additional personnel are required in most of the larger cities and counties in the state.

The Effect of Socialization on Public Health.—
The medical care received by the American people is the envy of the rest of the world. It has developed under the system of private practice. We have only to look at Europe where, over a period of the last twenty-five years, they have partially or completely socialized medical practice, to see their constantly mounting incidence and death rates in tuberculosis and other communicable diseases under their system as compared with the constantly decreasing incidence and mortality of these same diseases in our country, in order to see what a debacle that socialization can create in public health. —A. C. Callister: *The Medical Profession's Ideals in Medical Service*, Rocky Mountain M. J. 33:106 (February) 1941.

DEDICATION OF THE DEPARTMENT OF NEUROPSYCHIATRY

DUKE UNIVERSITY SCHOOL OF MEDICINE

November 29, 1940

DEDICATORY TALK

WILBURT C. DAVISON, M. D.

This new Department of Neuropsychiatry, headed by Dr. Richard S. Lyman, formerly of the staff of the Phipps Psychiatric Clinic of the Johns Hopkins Hospital, was started September 1, 1940. It was made possible by a generous grant from the Rockefeller Foundation, which effectively supplemented the gift of the Highland Hospital at Asheville, made last year by Dr. Robert S. Carroll. We are deeply grateful for their unselfish aid.

A Department of Neuropsychiatry has been ardently desired since the School was started, and the one we are dedicating today has been worth waiting for. The ward on the third floor is named for Dr. Adolf Meyer of the Phipps Psychiatric Clinic, and the Kirby Clinic in the out-patient department perpetuates the memory of Dr. George H. Kirby, one of North Carolina's pioneer psychiatrists.

During the past five years, interest in neuropsychiatry has grown in North Carolina. Following the survey of the mental health of the state by Dr. Lloyd J. Thompson in 1935, which was sponsored by the Rockefeller Foundation, the State Board of Charities and Public Welfare appointed Dr. James Watson as Director of Mental Hygiene and Dr. Richard F. Richie in charge of The Children's Unit. Our new Department of Neuropsychiatry will greatly aid this state program as well as fill the needs of the School and Hospital. There can be no doubt that the development of neuropsychiatry throughout the South will be greatly stimulated by the leadership which this new department can and will give to this difficult field of medicine.

DEDICATORY TALK

FREDERIC M. HANES, M. D.

With the inauguration of our new Department of Neuropsychiatry, and the completion of the Private Diagnostic building, Duke Medical School has completed its ten year plan. We now have a school well-rounded and well-balanced, containing under one roof the laboratories needed for scientific investigation and the wards for the care of patients.

The Trustees of Duke University and the Duke Endowment have dealt with us in a fine spirit of generosity and with a wise foresight which makes us humbly thankful. I say humbly, because so much, generously bestowed, places upon us a great obligation—an obligation that may well exceed our powers to perform. Let us not delude ourselves. The splendid surroundings in which we work will become only a reproach unless the quality of the work we do reflects credit upon these surroundings. "*Noblesse oblige.*"

Today we live in a grim and brutal world. Nations which we had hoped were leading us to a higher culture, and a kindlier civilization, are now dominated by ruthless men who are turning back for their inspiration to those bleak centuries justly termed the Dark Ages. It is a time to shake man's faith in man, but it is also a very fitting time to dedicate to the service of sick mankind one more small evidence that medicine holds fast to sanity in a world that seems violently insane.

Seventy-six years ago a group of men met at Gettysburg to dedicate a memorial to the soldier dead. Lincoln said, very simply, that they were not gathered to dedicate a monument, but to dedicate themselves to the cause in which they believed. And so today, it would seem fitting that we not only dedicate these buildings, but that we also dedicate ourselves anew to that profession which ever seeks to serve and help mankind.

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MARCH, 1941

THE EARLY DIAGNOSIS OF CARCINOMA OF THE STOMACH

One of the gravest defects in the education of the medical student is that disease too often is studied from the standpoint of the autopsy. So-called "textbook pictures" of disease frequently might be used by authors of textbooks on pathology. Nowhere is this unfortunate attitude better illustrated than in the case of carcinoma of the stomach, where textbooks of clinical medicine lay great emphasis upon signs which clearly indicate that the disease has progressed to a stage of complete therapeutic hopelessness. A patient exhibiting emaciation, anemia, loss of strength and a palpable epigastric tumor may arouse a mild interest in the pathologist, but certainly is of no interest whatsoever to the therapist!

It is estimated, on what seem to be reliable data⁽¹⁾, that 40,000 people in this country die yearly from cancer of the stomach. In contrast to this figure the number of patients with cancer of the stomach whose lives are saved by physicians is pitifully and tragically small. *The present status of this disease is a disgrace to the medical profession.*

This is not the place to enumerate the

various early evidences of cancer of the stomach, for our medical journals frequently contain articles on the subject. It must be said repeatedly and urgently, however, that any patient, and especially patients past 40 years of age, who complain of indigestion of *any character whatsoever* should cause the physician to think strongly of cancer, and his suspicion should not be allayed until all diagnostic methods have been exhausted. An aphorism worthy of memory is that in pathological states *blood means cancer until it is proven otherwise*. The demonstration of persistent occult blood in the stools may be much more important than x-ray evidence, which frequently is negative until the growth is far advanced.

It is truly remarkable how fearful physicians are of the word "cancer". All too often they acquiesce in the patient's attitude of minimizing the seriousness of a persistent and refractory indigestion. No wise physician will communicate hastily his fears to a patient, but neither will he lull himself into a false sense of security in the presence of possibilities so fearful, nor delay exploratory operation until the certainty of his diagnosis spells the certainty of death.

1. Gray, H. K.: Carcinoma of the Stomach, J.A.M.A. 116: 22 (January 1) 1941.

DR. MANNING, SECRETARY AND TREASURER

It is hard to think of a happier choice for a successor to Dr. Tom Long than Dr. Isaac H. Manning. His long service as dean of the University School of Medicine, climaxed by his year as president of the State Medical Society, has given him a wider acquaintance among North Carolina doctors, perhaps, than any other member of the Society. His sound judgment, his honesty, and his executive ability eminently fit him for the office. With the very capable help of Miss Margaret Long, who had been her father's right hand man and who knows every detail of the job, the work of the office should go on without a hitch. That it will do so is a tribute to the late Dr. Tom Long, to his daughter, and to Dr. Manning.

Dr. Manning's new position automatically makes him the business manager of the NORTH CAROLINA MEDICAL JOURNAL. To him and to Miss Margaret Long, this JOURNAL pledges its heartiest cooperation.

DR. PAUL H. RINGER

The following editorial from the January issue of *The Southern Medical Journal* will be of interest to all the members of the Medical Society of the State of North Carolina, of which Dr. Ringer was president in 1936.

PAUL HENRY RINGER

President of the Southern Medical Association

A man of many gifts is the new President, Dr. Paul H. Ringer, a linguist and a musician, as well as one of the most scholarly members of the medical profession.

He was born in New York City, November 6, 1881, the only child of Severin and Elisa Minot Ringer. His father, a Pole by birth, was Professor of Modern Languages at Lehigh University. His mother was a Belgian, and an accomplished musician. Dr. Ringer attended private schools in New York, received his A.B. from Columbia University in 1901, and his M.D. in 1904. He served internships in Bethlehem, Pennsylvania, and New York City, and came to Asheville, North Carolina, to begin practice in 1906. He was associated with the late Dr. Charles L. Minor, and specialized early in diseases of the chest. His years of practice have covered the period of prominence of Asheville in the field of tuberculosis; and he himself has achieved prominence for his work particularly in this disease.

In 1915, Dr. Ringer married Miss Eleanor Varick Morrison, of Asheville. They have two children, Paul, Jr., a graduate of Princeton and now a student at the Vanderbilt University Medical School, and Eleanor, who is at Sweet Briar College.

In the World War Dr. Ringer served as Captain in the Medical Corps of the United States, attached to the Italian Army at Base Hospital 102 in Vicenza, Italy. He has had many medical and civil honors, including the presidency of his state medical association and of leading organizations for the study and prevention of tuberculosis.

He speaks French and German fluently, has a singing voice of fine quality, and is a gifted speaker. A fluent writer, he is also an omnivorous reader with a catholic taste in literature. He has made many contributions to medical periodicals. He is broadly civic minded and in Asheville has headed the Community Chest among other charitable organizations, and the Civic Music Association, and he is active in the Presbyterian Church, in which he is an elder. His memberships include the Columbia University Club of New York, Biltmore Forest Country Club, Pen and Plate Club, and the Civitan Club.

He has been president of the Southern Tuberculosis Conference, has held office in several of the special societies, and is a diplomate of the American Board of Internal Medicine.

In 1913, he joined the Southern Medical Association and since then has attended twenty of its meetings. In 1928, he was General Chairman of the Asheville meeting of the Southern Medical Association and for six years represented North Carolina on the Council of the Association.

To a rare degree he combines the qualities of scholarship, ability as an internist and diagnostician, leadership and forceful speaking. Few men have reached the presidency of the Southern Medical Association so well equipped for the office and with such widespread approval of his associates as has Dr. Ringer.

HISTAMINIC CEPHALGIA

There exists a large group of patients who suffer from headaches or cephalgia, which may be described, for want of a more definitely etiologic term, as "functional" headaches. Needless to say, all headaches should be regarded as due to a demonstrable organic cause until the most careful study has ruled out brain tumors, sinusitis, hypertension, syphilitic meningitis and the many other definite pathological conditions capable of producing cephalgia. But the most meticulous examination will still leave unexplained a large heterogeneous group of headaches.

From this group Dr. Bayard T. Horton¹¹, of the Mayo Clinic, has very brilliantly separated a clear-cut, clinical syndrome which he calls "histaminic cephalgia". He defines

the syndrome as follows: "Histaminic cephalgia is characterized by a unilateral headache, which usually begins in the later decades of life, is of short duration as it generally lasts less than an hour, commences and often terminates suddenly, tends to waken the patient at night one to two hours after he has gone to sleep and is frequently eased by the patient sitting up or by standing erect. It is associated with profuse watering and congestion of the eye, rhinorrhea or stuffiness of the nostril, increased surface temperature and, often, swelling of the temporal vessels of the involved side of the head."

The pain is located in the distribution of the external carotid artery, and is the result of dilatation of its branches, due to histamine stimulation. The cure is produced by the graded, subcutaneous injection of histamine at certain intervals, or by histaminase by mouth.

Dr. Horton's contribution is a model of the type of very valuable clinical investigation which is within the powers of any well trained clinician. The article is so important and helpful that it should be studied carefully by every physician who cares for patients, no matter what his specialty may be.

1. Horton, Bayard T.: The Use of Histamine in the Treatment of Specific Types of Headaches, J.A.M.A. 116:377, (February 1) 1941.

* * * *

PROFESSOR WINGATE M. JOHNSON

In last month's issue of the NORTH CAROLINA MEDICAL JOURNAL there appeared a fine editorial entitled "Welcome to Dr. Tinsley Harrison". I am sure that all the readers of the JOURNAL will concur in this expression of respect for an eminent scientist and physician, but they will not forgive our modest editor for not telling them that Dr. Harrison is only half of the team heading the Department of Internal Medicine in the expanded Wake Forest Medical School in Winston-Salem. So, with the consent of the assistant editor, I am exercising my prerogative as a member of the editorial board to contribute an editorial to the JOURNAL.

Ever since the announcement was made that Wake Forest would move its medical school to Winston-Salem, it has been the

unanimous opinion of physicians and educators that there is no man better qualified for a professorship in Medicine than Dr. Wingate M. Johnson. Although he was constantly urged to assume the entire responsibility for the medical department, he steadfastly insisted that his interest is clinical medicine, and that in order to carry out a well rounded program, there should be a proper balance between didactics and research on the one hand and medical practice on the other. In this we all agreed. On the other hand, everybody except Dr. Johnson himself recognizes that he ranks as high in scholarship as any physician who may be considered for an academic position. A native son with a long line of family tradition for writing and scholarly attainment, Dr. Johnson has, while engaged in one of the busiest practices in the state, become recognized nationally as a writer and scholar. The faculty of Wake Forest College, voting unanimously to award him the honorary degree of Doctor of Science at Commencement of 1940, were equally as willing to offer him the degree of Doctor of Literature. His book, "The True Physician", published in 1936, is a treasure of both physicians and laymen. As editor of the JOURNAL, he has conducted a readable and understandable publication with the highest standards.

When the Board of Trustees of Wake Forest College at their meeting on January 8 elected Dr. Wingate M. Johnson Professor of Clinical Medicine and Dr. Tinsley R. Harrison Professor of Medicine, they assured for the new medical school a high ranking place in education. This opinion was expressed by Dr. Frederic M. Hanes, Professor of Medicine at the Duke Medical School, in his announcement of the appointment of these two men to the Wake Forest faculty at the meeting of the Duke Medical Society on January 15.

So we all agree, "Welcome to Dr. Tinsley Harrison"; but we would also add, welcome to Professor Wingate M. Johnson in one of the few fields of medicine in which he has not served. It is one in which all of his colleagues are confident that he will excel.

COY C. CARPENTER, M.D.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

August 9, 1940

DR. J. M. RUFFIN (reading the clinical summary):

This 59 year old colored married man was first seen in the Out-Patient Department in July, 1936. At that time he complained of choking and weakness for the past three weeks.

The family and marital histories were of no importance.

Past History: His general health had always been good. He had had no operations or serious injuries, and no cardiac or respiratory symptoms. At the age of 12 he had had an attack of painless jaundice, and low grade fever lasting for one week. In 1930 he had a two-week episode of diarrhea, passing twelve to fifteen stools daily, which occasionally contained blood. During 1932 he had a twelve-week episode of gnawing mid-abdominal pain, occurring about thirty minutes after meals and relieved only by magnesium sulphate. On two or three occasions during that period he passed large tarry stools. He had a penile sore at the age of 17, which lasted about three weeks. He took one intravenous injection of a yellow liquid. He had had gonorrhea twice, once at the age of 18, and once at the age of 32. He had lost about 34 pounds during the preceding two years.

Present Illness (1936): About three weeks previously, while working in the sun, he had a sudden onset of weakness, dizziness, scotomata and amblyopia. He did not fall, but was unable to continue working, and a few minutes later noticed a tickling in the throat and had a sensation of fullness which caused him to have a non-productive cough. Accompanying the attack were a severe frontal headache and extreme weakness. Two days later, thirty minutes following exertion, he had a sudden attack of severe, precordial, knife-like pain lasting two or three minutes, and dyspnea for about ten or fifteen minutes. He continued to have a constant tickling in the throat and a sensation of a mass in the suprasternal notch.

Physical Examination: Examination at that time revealed normal temperature, pulse, and respiration; the blood pressure was 110 systolic, 80 diastolic. He was in no pain or distress, but on talking or sitting up he had paroxysmal coughing. There was generalized lymph node enlargement. The pupils were equal and round and reacted normally to light and accommodation except for some hippus. Ophthalmoscopic examination showed only moderate tortuosity of the retinal vessels. The heart was enlarged 12 cm. to the left of the midsternal line in the fifth interspace. The aortic second sound was somewhat metallic. There were no murmurs. Retromanubrial dullness was 6 cm. in the second interspace, and 8 cm. in the third interspace. The peripheral vessels showed moderate sclerosis. Abdominal examination was normal except for some tenderness over the right kidney region. Neurological examination showed no changes.

Accessory Clinical Findings: The blood Wassermann and Kahn reactions were 4 plus. The urine was negative. The hemoglobin was 13.5 Gm. Fluoroscopy of the chest showed diffuse dilatation of the aorta, especially in the ascending portion, which was thought to be due to aneurysm. This was somewhat larger a month later.

He received six injections of bismuth during the next two months and then was lost sight of.

Final Admission: He returned to the emergency room on July 14, 1940. During the interim he had apparently gotten along fairly well. On the afternoon of admission he was sitting watching a baseball game, when, immediately after laughing heartily, he was seized by a sense of tightness in his neck and throat, with some dyspnea. This gradually became worse during the next hour and was associated with distention of the veins of his arm, the right side of his neck and the face.

Physical Examination: The temperature was 37.5 C.; pulse, 124; respirations, 36. The blood pressure in the right arm was 120 systolic, 70 diastolic; in the left, 120 systolic, 65 diastolic. The patient was an acutely ill, moderately dyspneic, elderly negro, with marked engorgement of the neck veins. During the course of the examination he frequently "milked down" the veins of his neck, because he said it helped him to breathe. There was a generalized lymph node enlarge-

ment. There was marked distention of the veins on the right side of the face, forehead and scalp. The right pupil was somewhat smaller than the left; both responded to light. Hearing was good and equal. The nose was partially obstructed. There was marked venous engorgement. The teeth were carious. The tongue was coated. The pharynx showed congestion and dilatation of the superficial veins with edema of the soft tissues. The tonsils were small. The trachea was questionably shifted to the left. The chest was symmetrical. Expansion was bilaterally limited but equal. Respiratory movement was primarily abdominal. Breathing was shallow. Breath sounds, fremitus and whispered voice were diminished bilaterally, but were equal except in the region of the left scapula, where they were increased and breath sounds were bronchial. There was dullness to percussion beneath the left scapula. No rales were heard. The apical impulse was noted in the fifth interspace 12 cm. from the midsternal line. The heart rate was rapid. The sounds were of fair quality. The rhythm was regular. Retro-manubrial dullness was 10.5 cm. in the second interspace. In the aortic area there was a remarkably loud, almost ringing, machine-like to and fro murmur, transmitted over the entire chest. No masses nor organs were palpable in the abdomen. The genitalia were those of a normal male. There was no edema.

Accessory Clinical Findings: The hemoglobin was 14.1 Gm., or 91 per cent. There were 4,820,000 red blood cells, with a color index of 0.9. There were 9980 leukocytes, with segmenters 80 per cent, stabs 2 per cent, large lymphocytes 5 per cent, small lymphocytes 10 per cent, basophils 1 per cent, monocytes 2 per cent. The blood Wassermann and Kahn tests were negative. The urine was cloudy and amber, with a specific gravity of 1.022, an acid reaction, no sugar, albumin 1 plus; microscopic examination showed it to be loaded with white cells, with rare red blood cells, many granular casts, a few hyaline casts, and no benzidine or acetone. Fluoroscopy showed a huge, non-expansile mass in the upper mediastinum. Venous pressure in the right arm was 390 mm. of water; in the left arm, 425 mm.

Course in the Hospital: The patient continued moderately dyspneic and continued to have the marked venous engorgement. On

the day after admission, venous pressure in the left arm was 470 mm. of water; in the right arm, 400 mm. of water. On July 16, 1940, the arterial blood pressure readings were: left arm, 130/60; right arm, 130/68; left leg, 140/80; right leg, 148/70. He became more and more stuporous. On the fifth day 400 cc. of blood were removed by phlebotomy. Stupor deepened. The pulse rate ran between 120 and 140. Respirations varied between 24 and 34. On the sixth day the temperature rose to 39.3 C., and the patient expired at noon.

Discussion

DR. RUFFIN: This man obviously had syphilis and an aneurysm of the aorta. At the age of 17, forty-two years ago, he had an initial lesion and received inadequate treatment. He was entirely symptom free until four years ago, at which time he experienced a severe precordial pain accompanied by moderate dyspnea. Examination of the chest at that time revealed very little evidence of disease, but fluoroscopic examination showed a definite widening of the aorta.

It is of interest to note that for four years he was comparatively comfortable. After moderate exertion, a hearty laugh, he suddenly became breathless, and noted marked distention of his neck veins. On examination, the most striking findings were the distention of the veins over the face and neck and a to and fro murmur over the chest. On fluoroscopic examination, a large non-expansile mass was seen in the upper mediastinum. The other finding of interest was the high venous pressure, about 400 mm. of water.

There are two explanations for the clinical picture which this man presents:

- (1) A sudden dilatation of his aneurysm pressing upon the return circulation.
- (2) Rupture of the aneurysm into the mediastinum.

The sudden onset with the marked interference to the venous return suggests that his aneurysm ruptured.

Clinical Impression:

1. Syphilis.
2. Syphilis of the aorta with aneurysm.
3. Rupture of aneurysm into the mediastinum.

Pathological Discussion

DR. SPRUNT: The anatomical diagnosis in this case was: Syphilitic aortitis and slight involvement of the aortic valve; syphilitic aneurysm of the ascending arch of the aorta, with rupture into the superior vena cava; chronic passive congestion of the liver; fibrous pleural adhesions, left; multiple small cysts of the left kidney; adhesions of the liver, spleen, and omentum; benign prostatic hypertrophy, slight; atrophy of the testes.

It is thus seen that Doctor Ruffin's analysis was correct, except that the rupture occurred into the superior vena cava, thus elevating the venous pressure. It is also interesting in this case that the heart showed no enlargement. This is understandable, however, in that the syphilis involved the aortic valve to a slight degree only. The other organs showed nothing of interest.

CASE REPORT

NORTH CAROLINA BAPTIST HOSPITAL

WINSTON-SALEM

A white male, 30 years of age, was admitted to the hospital complaining of severe epigastric pain.

The onset of the illness was somewhat indefinite. The patient stated that he had been having epigastric pain for a number of years, but during the past year the pain had been much worse. About one month prior to admission the pain became so severe that it was not relieved by a quarter-grain of morphine. The pain was localized in the mid-epigastrium, and was severe and boring in character. Nausea and vomiting had been present the last month. Vomiting followed the intake of all food, regardless of its character. The patient had become somewhat more constipated than he normally was, but at no time had he noticed any change in the color of his stools.

About two months prior to admission, the patient developed a severe cough, productive of a mucopurulent appearing material. Hemoptysis had not occurred. During the past year his weight had fallen from 160 to 115 pounds.

Past History: The patient had been an alcoholic for the past fifteen years. He had been a known syphilitic for the past eight

years, and had had some treatment, the amount not ascertained.

The family history was not contributory.

Physical examination revealed an emaciated, dehydrated, white male who appeared much older than the age stated, and who appeared to be in acute pain. *Eyes:* His vision was markedly diminished. He was unable to see fingers held about 24 inches away. Because of uncooperativeness on the part of the patient, the eye grounds were not examined. The pupils were round, very small and failed to react to light and accommodation. *Lungs:* Many crepitant rales were heard throughout both fields. The resonance was not impaired. Expansion was equal. *Heart:* The left border was increased considerably. No murmurs were heard, and the tones were of fair quality. The rhythm was regular. The abdomen was of the scaphoid type. There was a right rectus scar. Marked tenderness was noted over the upper abdomen. No masses were palpated. The kidneys, liver and spleen were not palpated.

The blood pressure was 220 systolic, 140 diastolic; pulse 100; temperature 99 F.; respirations 20.

Examination of the urine on admission showed an acid urine with a 4 plus reaction for sugar, 2 plus for albumin, a moderate number of hyaline casts, occasional granular casts and one or two white cells per high power field. There were 4,850,000 red cells, with the hemoglobin 90 per cent; there were 19,900 white cells, with 90 per cent polymorphonuclears and 10 per cent lymphocytes. Sputum examination revealed many leukocytes, many staphylococci, streptococci and diplococci. No tuberculous organism was found.

On the night of the fifth day in the hospital, the patient developed a profuse hemorrhage from the nose and mouth. After nine days in the hospital he expired very suddenly.

Clinical impression:

1. Malignant nephrosclerosis.
2. Syphilis with possible tabetic crisis.
3. Gastritis (alcoholic).
4. Cirrhosis of the liver.

Autopsy Findings

Autopsy revealed an emaciated white male, 30 years of age. There was a moderate degree of lymphadenopathy involving the cer-

vical, axillary and inguinal lymph nodes.

The peritoneal surfaces were smooth, and a moderate degree of lymphadenopathy was observed involving the mesenteric lymph node. The same general lymphadenopathy was found within the mediastinum. Microscopic sections from the lymph nodes showed many large mononuclear cells, and in some areas, an increase in the amount of fibrous tissue.

The liver weighed 1580 Gm. The outer surface was dark red in color; the inferior surface was roughened and somewhat nodular. On section the tissue was firm, and in areas appeared to be quite fibrous. Microscopic sections showed definite fibrosis, and many of the liver cells contained large vacuoles within their cytoplasm. The spleen, pancreas and suprarenal glands failed to reveal definite pathological changes.

The mucosa of the stomach was quite injected. Microscopically, the capillaries were found to be dilated; red blood corpuscles and chronic inflammatory cells were found in large numbers within the mucosa and submucosal areas. Lesions were not found within the stomach or esophagus to indicate the presence of an ulcer, healed ulcer or varicosities.

The right kidney weighed 245 Gm., the left kidney 200 Gm. The cortical surfaces were quite granular and roughened, showing several large areas where the capsule was adherent. The cortical and medullary markings revealed several areas of scarring and fibrosis. Microscopic findings within the kidney showed fibrous crescents and hyalin changes within the glomeruli. Marked thickening of the arterioles was observed throughout the kidney substance.

The heart weighed 445 Gm. The myocardium was thickened over the left ventricle; the endocardial surfaces and valves were normal. Roughened ivory plaques were found within the first portion of the aorta, and the ostia of the coronary arteries were greatly reduced in size. Microscopic sections taken from the aorta revealed areas of necrosis within the media and heavy infiltration with lymphocytes.

The pleural surfaces were smooth and glistening, and on section through the lungs only a moderate degree of congestion was observed near the base of each lung. Microscopically, a few chronic inflammatory cells were found to be scattered diffusely through-

out the lung tissue, and several areas of increased fibrosis were encountered.

Pathological Diagnosis:

1. Syphilitic aortitis with coronary ostia stenosis.
2. Alcoholic cirrhosis of the liver.
3. Malignant nephrosclerosis.
4. Acute gastritis.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D.

Raleigh

MALPRACTICE—Negligence must be proximate cause of alleged injury; physician and surgeon not an insurer of results.

In suits for negligence instituted against physicians, two rules which are of importance are: (1) Negligence must be the proximate cause of the alleged injury; and (2) the physician and surgeon is not an insurer of results. In order to show the practical application of these two rules, a case is reviewed in which an action to recover damages was brought by the plaintiff for the death of his wife. He alleged that death was caused by the negligence of the defendant, a physician and surgeon, who at the request of the plaintiff had performed an operation (presumably the induction of labor) upon his wife about one hour before her death.

The allegations contained in the complaint were essentially as follows: First, the defendant failed to prepare the patient properly for operation, and did not make a pre-operative examination. Second, the defendant left the patient before she had recovered from the anesthetic and without providing for the presence of another physician or of a competent nurse. The plaintiff alleged that in this negligence lay the direct and proximate cause of death.

The deceased, referred to as the plaintiff's intestate, was the plaintiff's wife. At her death on May 30, 1928, she was 18 years of age. She had been receiving prenatal care by the defendant and was to come to term some time in June, 1928. Because of untoward symptoms—specifically mentioned were swelling of the feet and legs—the physician advised interference, and as a consequence the procedure was carried out in the home of the deceased. The defendant secured the services of another physician to administer the anesthetic, but this doctor's duties were concerned only with the giving of the anesthetic. Following the operation the anesthetist remained with the patient about five minutes, and the attending physician for a period of thirty-five minutes. After assuring the husband that the patient's condition was satisfactory, the defendant left the home while the patient was still under the influence of the anesthetic. Shortly after his leaving, the intestate suffered a severe hemorrhage and died about one hour following the termination of the operation.

The defendant requested nonsuit in the case, and this was granted by the trial court, whereupon the plaintiff appealed. The action of the lower court in allowing nonsuit was affirmed by the Appellate Court, and the following statement was made by that tribunal: "Where evidence does not tend to show that alleged negligence proximately caused damage nonsuit is proper." In substantiation the following statement was added: "Wherein an action to recover damages for the death of plaintiff's intestate, alleged to have been caused by the negligence of the defendant physician in performing an

operation on her, there must be sufficient evidence of a causal relation between the alleged acts of negligence and the injury, and where the evidence viewed in the light most favorable to the plaintiff fails to show that the alleged acts of negligence of the defendant, in failing to exercise due care to make an adequate examination of the deceased before the operation, and his alleged negligence in leaving her before she recovered from the effects of the anesthetic, without providing a nurse, were a proximate cause of the death of intestate, the defendant's motion for judgment as of nonsuit is properly allowed."

The Court's remarks with reference to the second principle—namely, that the physician and surgeon is not an insurer of results—are as follows: "A physician and surgeon is not an insurer of the life of his patient; even when he has failed to exercise due care in the treatment of his patient or in the performance of an operation, he cannot be held liable for the death of his patient, in the absence of evidence legally sufficient to show that his negligence was the cause of death."

North Carolina Supreme Court Report,
Book 199, p. 246.

BULLETIN BOARD

PRESIDENT'S MESSAGE

DR. THOMAS W. MASON LONG

An Appreciation

Nature was kind to him in its endowments of body and mind. The best that heredity could give him from a long line of notable and worthy ancestors was his. Cultivation and study further enriched his ability and personality.

A versatility of interests gave him a sympathetic and close contact with many professional and lay groups in North Carolina. Humanitarianism was a driving force within him. He gave of his skill and vitality as readily to his humblest patient as to the prosperous and well-to-do.

The quality of his mercy was never strained. Courage and faith walked with him all of his days. They were his unflinching friends when he realized that in his hourglass of time, the stream of life was running thin.

He was true to the best that men saw in him. He was able to endure the hurt and loss for which there is no cure. Still unafraid he faced death patiently and undismayed.

A fine gentleman and a true physician has gone from our midst. Each day of his useful life he lived and toiled for others. Even to his last hour that was his effort and his creed.

How well might we say of him with the poet:

When night slips down and day departs
And rest returns to weary hearts,
How fine it is to close the book
Of records for the day, and look
Once more along the traveled mile
And find that all has been worth while;
To say: "In honor I have toiled:
My plume is spotless and unsoiled.

—Edgar A. Guest.

HUBERT B. HAYWOOD, M.D.

A REQUEST BY THE CANCER COMMITTEE

In the past few years the Cancer Committee has made varied approaches to the problem of cancer education. The first one was to the laity. Working in close coordination with the Field Army of the Society for Control of Cancer, we furnished speakers for audiences of club women, parent-teacher associations, church groups, civic clubs and many other organizations. We felt that this work helped but did not fulfil our mission.

Our next approach was to the medical profession, asking their full cooperation. We requested that the District Societies devote one meeting a year to cancer. This was done by most of the Districts, and the symposia were excellently prepared and would have been a credit to any National Society. We felt that these programs called the attention of most of the physicians in the state to this important field of medicine. It has caused all of us to think of this most dreadful disease. The response of the entire profession was all that could be desired.

For this year's undertaking the Committee has decided to adopt the method of the organizations fighting tuberculosis. The educational work of these has been outstanding, and perceptible results obtained.

These societies have taken the programs to the youth. We feel that the boys and girls of high school and college age will retain this information. They will use it in their present homes among their parents, brothers, and sisters. They will later take it to their own homes. Taking these thoughts into consideration, we have planned this year to attempt to have a cancer talk made in every high school and college in the state. These talks are to be made by local or invited physicians, if physicians can be had for this

work. If not we hope to have a nurse or a science teacher in the school to read a paper on cancer furnished to them by us.

We ask the assistance of every County Medical Society in the state in this work.

We will appreciate the cooperation of every physician in the state. If you are willing to take part in this program, please write the chairman at once offering your services. We will gladly furnish you with any data or reprints that we have at our disposal.

Committee:

H. B. IVEY, *Chairman*, Goldsboro
T. LESLIE LEE
C. C. CARPENTER.

MINUTES OF THE EXECUTIVE COMMITTEE
MEDICAL SOCIETY OF THE STATE OF
NORTH CAROLINA

February 9, 1941

The Executive Committee of the Medical Society of the State of North Carolina met at 11 a. m. Sunday, February 9, 1941, in the Sir Walter Hotel, Raleigh, N. C. The meeting was called to order by the President, Dr. Hubert B. Haywood, who stated that its purpose was to fill the vacancy caused by the death on February 3, 1941, of the Secretary-Treasurer, Dr. T. W. M. Long, and to transact such other business as might come up.

The following members were present:

Dr. Hubert B. Haywood, Raleigh, President
Dr. F. Webb Griffith, Asheville, President-Elect
Dr. D. W. Holt, Greensboro, First Vice President
Dr. T. C. Kerns, Durham, Second Vice President

Councilors

Dr. H. D. Walker, Elizabeth City, First District
Dr. Thomas Leslie Lee, Kinston, Second District
Dr. W. Houston Moore, Wilmington, Third District
Dr. G. W. Mitchell, Wilson, Fourth District
Dr. J. G. Pate, Gibson, Fifth District
Dr. George L. Carrington, Burlington, Sixth District
Dr. Robert H. Crawford, Rutherfordton, Seventh District
Dr. James H. McNeill, North Wilkesboro, Eighth District
Dr. I. E. Shafer, Salisbury, Ninth District.

Dr. Donnell B. Cobb, Goldsboro, Chairman of the Legislative Committee, was also present.

At the President's suggestion, the members stood for a minute in silent tribute to Dr. Long.

On motion, the reading of the minutes of the last meeting of the Executive Committee was dispensed with.

The President called for any unfinished business. None appearing, the Committee proceeded to the consideration of new business.

President Haywood explained that he had called the Executive Committee together at this early date after Dr. Long's death because of the shortness of time until the annual meeting of the Society and the imperative need to choose a successor to Dr. Long as Secretary-Treasurer, both on that account

and because of the legislative matters which were in his hands.

Dr. I. H. Manning of Chapel Hill was unanimously elected to fill the position of Secretary-Treasurer.

Dr. F. Webb Griffith moved that the \$100 monthly salary of Miss Margaret Long, secretary to the late Secretary-Treasurer, be continued, and that the incoming Secretary-Treasurer be urged to utilize her services if practicable. This motion was duly seconded, and when put to vote was carried unanimously.

Dr. I. E. Shafer moved that the salary of Dr. Long be paid until the expiration of his term of office, the motion being seconded by Dr. Kerns. An amendment providing that the salary be paid until May 1, 1941, was offered by Dr. G. W. Mitchell, seconded by Dr. Kerns, and accepted by Dr. Shafer. The amended motion was then put to vote and was unanimously carried.

The President appointed Dr. McNeill as chairman of a committee to draw up suitable resolutions on the death of Dr. Long, asking him to choose two other members of the Executive Committee to serve with him. At the request of Dr. McNeill, Dr. Mitchell and Dr. Holt agreed to serve on the committee.

Dr. Griffith brought up the matter of whether the Committee on Medical Preparedness should or should not ask the Honorable Josiah W. Bailey, Senior Senator from North Carolina, to sponsor in Congress a measure providing for payment to physicians for examination of draft-board selectees. There was considerable discussion on this matter, and also on the practicability of having the examinations made by Army medical officers.

Dr. Mitchell offered the following motion: Resolved, that the Executive Committee of the Medical Society of the State of North Carolina, through the Chairman of its Committee on Medical Preparedness, ask the War Department, through the proper channels, to set up an examining board in each congressional district, to act in lieu of the examiner attached to each draft board, such examining boards to be composed of regular Army medical officers, in order that the decision of the examining board to accept selectees for Army service may be final. This motion was seconded by Dr. Shafer, who offered an amendment to provide that the local examiner act as advisor to the Army examining board. The amendment was seconded by Dr. Holt and was accepted by Dr. Mitchell, and the motion as amended was adopted.

The President was requested to see General John B. Van Metts, the Adjutant General of North Carolina, and communicate to him the action taken by the Executive Committee in adopting the foregoing motion and to offer to the War Department, through him, the use of all local hospital facilities, x-ray equipment, laboratories, etc.

Dr. Holt at this time reported that he had had a telephone conversation with Dr. I. H. Manning and that Dr. Manning had agreed to act as Secretary-Treasurer until the regular meeting of the Society in May.

No further business appearing, the Committee, on motion of Dr. Lee, adjourned at 12:40 p. m.

NOTICE

Space is still available for scientific exhibits at the meeting of the Medical Society of the State of North Carolina to be held in Pinehurst, May 19, 20, and 21. Anyone desiring space should write Dr. I. H. Manning, Chapel Hill, or Miss Margaret Long, Roanoke Rapids.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

The School of Medicine and the Extension Division of the University of North Carolina will sponsor two Post Graduate courses in Medicine during the spring, at Wilson and at Raleigh. The dates and the program for the meetings follow.

Post Graduate Course in Medicine, Wilson. March 5—April 16, 1941

Dinner: 7:00 p. m., Hotel Cherry.

Lecture: 7:00 p. m., Hotel Cherry.

Clinics: Announcement of dates and place will be made at the first meeting.

Program

Wednesday, March 5—The Catastrophes of Peptic Ulcers: Dr. E. L. Eliason, University of Pennsylvania, Philadelphia.

Wednesday, March 19—Gastro-Intestinal Diseases in Children: Dr. Alexis F. Hartman, Washington University, St. Louis, Mo.

Wednesday, March 26—The Interpretation of Serologic Tests for Syphilis: Dr. J. E. Moore, Johns Hopkins University, Baltimore, Md.

Wednesday, April 2—The Heart in Pregnancy: Dr. Wm. B. Porter, The Medical College of Virginia, Richmond, Va.

Wednesday, April 9—Clinico-Pathological Conference: Dr. Balduin Lucke and Dr. Francis Wood, The University of Pennsylvania, Philadelphia.

Wednesday, April 16—The Management of Pregnancy: Dr. Edward A. Schumann, University of Pennsylvania, Philadelphia.

Post Graduate Course in Medicine, Raleigh. March 14—April 26, 1941

Clinics: 4:30 p. m., State Laboratory of Hygiene Building.

Dinner: 7:00 p. m., Carolina Hotel Ball Room.

Lecture: 8:00 p. m., Carolina Hotel Ball Room.

Program

Friday, March 14—Uses and Abuses of Sulfanilamide, Sulfapyridine, Sulfathiazole: Dr. Harrison F. Flippin, University of Pennsylvania, Philadelphia.

Thursday, March 20—Gastro-Intestinal Diseases in Children: Dr. Alexis F. Hartman, Washington University, St. Louis, Mo.

Friday, March 28—Diagnosis and Common Treatment of Diseases of the Colon and Rectum: Dr. Louis A. Buie, Mayo Clinic, Rochester, Minn.

Friday, April 4—Diagnosis of Acute Abdominal Conditions: Dr. W. Wayne Babcock, Temple University, Philadelphia.

Friday, April 11—Diagnosis and Treatment of Anaemias: Dr. Russel L. Haden, Cleveland Clinic, Cleveland, Ohio.

Thursday, April 17—The Management of Pregnancy: Dr. Edward A. Schumann, University of Pennsylvania, Philadelphia.

Friday, April 25—Office Urology: Dr. P. S. Pelouze, University of Pennsylvania, Philadelphia.

* * *

Mr. Selskar M. Gunn, Vice President of The Rockefeller Foundation, visited the School of Public Health the latter part of January and spoke to the students and faculty on "Public Health and Its Scope".

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Dr. R. L. Carlton of Winston-Salem, member of the board of directors of the Winston-Salem Tuberculosis Association and North Carolina representative director of the National Tuberculosis Association, has been appointed chairman of the Committee on Nomination of Directors of the National Tuberculosis Association. The appointment was made by Dr. Paul McCain, president of the National Tuberculosis Association.

Dr. P. A. Yoder, Superintendent of the Forsyth County Sanatorium, Winston-Salem, and a member of the Executive Committee of the North Carolina Tuberculosis Association, is a member of the Committee on Nominations of the American Trudeau Society.

* * *

Preliminary figures furnished by thirty-one states and the District of Columbia to the U. S. Public Health Service for the first six months of 1940 show that the tuberculosis death rate in that period is 1.8 per cent less than the rate for the corresponding period in 1939.

* * *

The annual meeting of the North Carolina Tuberculosis Association will be held in Greensboro on Wednesday, April 30. The Program Committee, composed of the president, Mrs. Chas. E. Platt, Dr. Paul McCain, Dr. Paul Yoder, and Frank Webster, is now working on the program for this meeting.

* * *

Two full tuition scholarships of \$600 each are available in the field of health education at Massachusetts Institute of Technology for 1941-42. They are available for women only. The scholarships will be awarded in June, 1941, and applications should be received not later than April 30. Any one interested is invited to write to the Child Health Education Service of the National Tuberculosis Association, 1790 Broadway, at 58th Street, New York, N. Y., for application blanks.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Fifteen tiny infants were either smothered to death by bed clothing or died of suffocation when sleeping parents rolled over on them, during the month of January, this year, according to reports received by the State Board of Health's Division of Vital Statistics, of which Dr. R. T. Stimpson is the Director.

During every year there are about seventy-five such deaths in North Carolina, attaches of the Vital Statistics Division point out.

Of the fifteen victims reported last month, eight were white and seven were Negro babies.

APPOINTMENTS IN CLASS H-V(S) AND CLASS H-V(P), U. S. NAVAL RESERVE

The appointment of commissioned and warrant officers qualified for specialists duties in connection with the Medical Corps of the Navy in Class H-V(S), U. S. Naval Reserve; and the appointment of third and fourth year medical and dental students as Ensigns Class H-V(P), U. S. Naval Reserve, has recently been authorized.

Further information and instructions for submitting applications may be obtained by addressing The Commandant, Sixth and Seventh Naval Districts, Navy Yard, Charleston, S. C.

TRI-STATE MEDICAL ASSOCIATION

The Tri-State Medical Association of the Carolinas and Virginia met at the O'Henry Hotel in Greensboro on February 24 and 25. The following program was presented:

Monday, February 21, 10 a. m.

- "Postoperative Distention"—Dr. Irwin G. Linton, Charleston.
 "The Use of Encephalography in the Diagnosis of Subdural Hematoma"—Dr. William Reid Pitts, Charlotte.
 "An Analysis of Fifty Cases of Shock Treated With Plasma"—Drs. Charles S. White, J. Lloyd Collins, and Jacob Weinstein, Washington.
 "Blood Plasma Transfusion" (Lantern Slides)—Dr. John Elliott, Salisbury.
 "On the Physiology and Pathology of Breast Tumors" (Illustrated)—Dr. Ivan Proctor, Raleigh.
 "The Mechanism of Cardiac Pain and Its Differentiation From Other Chest Pains"—Dr. Tom W. Baker, Charlotte.

2 p. m.

- Clinic—Conditions of High Blood Pressure—Dr. E. A. Hines, Jr., of the Mayo Clinic.
 Clinic—Splenectomy in Blood Dyscrasias—Dr. J. W. Tankersley, Greensboro.
 Clinic—X-Ray Diagnostic Studies of the Uterine Cavity by a New Method—Dr. W. B. Norment, Greensboro.
 Clinic—Allergy—Dr. E. W. Vaughn, Greensboro.
 "Pulmonary Hemorrhage"—Dr. Karl Schaffle, Asheville.
 "The Roentgen Treatment of Cutaneous Epitheliomas"—Drs. Allen Barker, Charles H. Patterson and Charles D. Smith, Roanoke.
 "Cancer and Its Therapy"—Dr. Wright Clarkson, Petersburg.

8 p. m.

- Address of the President—Dr. Charles J. Andrews, Norfolk.
 Address of the President-Elect—Dr. Addison G. Brenizer, Charlotte.
 Address—"The General Problems of Old Age"—Dr. Lewellys F. Barker, Baltimore.
 Address—"The Present Status of Chemotherapy in the Treatment of Infected Wounds and Septicemia"—Dr. Hiram Winnett Orr, Lincoln, Nebraska.

Tuesday, February 25, 9 a. m.

- "The Present Status of Prostatic Surgery—Analysis of Our Last 91 Cases"—Dr. Raymond Thompson, Charlotte.
 "Skin Grafting in Orthopedic Conditions" (Lantern Slides)—Dr. W. M. Roberts, Gastonia.
 "Forty-Two Years of Appendicitis"—Dr. Robert L. Gibbon, Charlotte.
 "Information of Clinical Value Gained From Uterine Curettings"—Dr. Robert P. Morehead, Bowman Gray School of Medicine.
 "Hand Injuries"—Dr. James W. Davis, Statesville.
 "Lipodystrophia Progressiva"—Dr. George R. Wilkinson, Greenville, S. C.
 "Gunshot Wounds of the Pregnant Uterus"—Dr. T. C. Bost, Charlotte.
 "A Consideration of Clean Wound Healing"—Dr. William H. Prioleau, Charleston.
 "The Potent Drug Iodine"—Dr. J. G. Johnston, Charlotte.

2 p. m.

- Clinic—Rheumatic Fever—Dr. C. M. Gilmore, Greensboro.

Clinic—Certain Nervous and Mental Conditions—Drs. Wesley Taylor and J. Fred Merritt, Greensboro.

Clinic—Carcinoma—Dr. E. D. Apple, Greensboro.

"Problems in Heredity"—Dr. William Allan, Charlotte.

"On Preventing Blindness"—Dr. Herbert C. Neblett, Charlotte.

"The Physiology of the Nose—And What Not To Do" (Motion Picture)—Dr. Shahane Taylor, Greensboro.

8 p. m.

Address—"Visual Disturbances in Avitaminosis"—Dr. V. P. W. Sydenstricker, of the Medical School of the University of Georgia, Augusta.

Address—"Some Phases of Obstetric Care"—Dr. R. G. Douglas, of the Lying-In Hospital, New York.

Address—"The Background and Treatment of Hypertensive Disease"—Dr. Edgar A. Hines, Jr., of the Mayo Clinic.

At the business meeting held on Tuesday afternoon, the following officers for next year were elected: Dr. George Wilkinson, Greenville, S. C., president-elect; Dr. J. M. Northington, Charlotte, secretary-treasurer; Dr. J. W. Hooper, Wilmington, Dr. H. J. Langston, Danville, and Dr. George Bunch, Columbia, vice presidents. Councillors, elected for a period of three years, are: Dr. Steele Dendy, Spartanburg; Dr. J. W. Davis, Statesville; and Dr. Allen Barker, Roanoke. Dr. A. G. Brenizer of Charlotte, president-elect, ascended to the presidency.

SOUTHEASTERN SURGICAL CONGRESS

The Twelfth Annual Post Graduate Assembly of the Southeastern Surgical Congress was held in Richmond, Virginia, on March 10, 11, and 12. The following program was presented:

Monday, March 10, 9 a. m.

- Robert L. Sanders, M.D., University of Tennessee—"Multiple Carcinomata of the Stomach: Case Report." Illustrated.
 Frederick H. Falls, M.D., University of Illinois—"Ectopic Pregnancy." Illustrated.
 R. Arnold Griswold, M.D., University of Louisville—"The Treatment of Recent Compound Wounds." Illustrated.
 Bradley L. Coley, M.D., New York City—"Conservative Surgery in The Treatment of Bone Tumors." Illustrated.
 Hu C. Myers, M.D., Philippi, West Virginia—"Duodenal Drainage in the Diagnosis of Gall Bladder Disease." Illustrated.
 Gershom J. Thompson, M.D., The Mayo Clinic, Rochester, Minn.—"Carcinoma of the Prostate: Its Conservative Surgical Treatment." Illustrated.

2:30 p. m.

- Fred Rankin, M.D., Lexington, Ky.—"Surgical Treatment of Adenomatosis of the Colon." Illustrated.
 Fred M. Douglass, M.D., Toledo, Ohio—"Surgery of the Biliary Tract." Illustrated.
 Walter B. Martin, M.D., Norfolk, Va.—"The Interdependence of Medicine and Surgery."
 Willis C. Campbell, M.D., Memphis, Tenn.—"Treatment of Compound Fractures." Illustrated.
 Alfred B. Longacre, M.D., Tulane University—"Immunity in Staphylococcus Infections." Illustrated.
 William L. Estes, Jr., M.D., Bethlehem, Pa.—"Non-Penetrating Trauma of the Abdomen." Illustrated.

8 p. m.

Memorial to Doctors Miller and Long—T. C. Davison, M.D., Atlanta, Ga.

Presidential Address—Irvin Abell, M.D., Louisville, Ky.

The C. Jeff Miller Lecture, by Frank H. Lahey, M.D., Boston, Mass.—“The Surgical Treatment of Gastric Duodenal and Jejunal Lesions.” Illustrated.

V. P. Sydenstricker, M.D., Augusta, Ga.—“The Importance of Vitamin Treatment in Preparation and Post-Operative Care of Patients.” Illustrated.

Brien T. King, M.D., Seattle, Wash.—“A New and Function Restoring Operation for Bilateral Abductor Cord Paralysis.” Illustrated.

Tuesday, March 11, 9:00 a. m.

E. S. Gurdjian, M.D., Detroit, Mich.—“Pathology and Surgical Management of Acute Head Injury.” Illustrated.

Everard A. Wilcox, M.D., and Robert Greenblatt, M. D., Augusta, Ga.—“The Hormonal Therapy of Small Fibro-Myomata of the Uterus.” Illustrated.

Frank Philip Coleman, M.D., and Gordon S. Seastrunk, M.D., Columbia, S. C.—“Individual Ligation in Pneumonectomy and Extra-mediastinal Individual Ligation in Lobectomy—An analysis of the authors series.” Illustrated.

Parker C. Hardin, M.D., Monroe, N. C.—“Cod Liver Oil Therapy of Wounds and Burns.” Illustrated.

James R. Garber, M.D., Birmingham, Ala.—“Realities in Obstetrics.”

W. Lowndes Peple, M.D., Richmond, Va.—“The Results of Radium Treatment of Cancer of the Cervix.” Illustrated.

2:30 p. m.

Elkin L. Rippey, M.D., Nashville, Tenn.—“Management of Gun Shot Wounds of the Abdomen.” Illustrated.

Alfred I. Folsom, M.D., Dallas, Texas.—“Some Minor Urological Procedures of Value to the General Practitioner.” Illustrated.

J. M. Emmett, M.D., Clifton Forge, Va.—“The Surgical Treatment of Carcinoma of the Stomach.” Illustrated.

Charles F. Geschickter, M.D., Baltimore, Md.—“The Endocrine Aspect of Chronic Cystic Mastitis.” Illustrated.

J. Orville Morgan, M.D., Gadsden, Ala.—“Surgery in Peptic Ulcer.” Illustrated.

Byrd Charles Willis, M.D., Rocky Mount, N. C.—“The Diagnosis and Treatment of Delayed and Immediate Traumatic Rupture of the Spleen with Report of Cases.” Illustrated.

Wednesday, March 12, 9:00 a. m.

Temple Fay, M.D., Philadelphia, Pa.—“Further Observations on Human Refrigeration.” Illustrated.

Harley R. Shands, M.D., Jackson, Miss.—“Cancer of the Ovary.” Illustrated.

C. C. Howard, M.D., Glasgow, Ky.—“Review of 6,000 Spinal Anesthetics from the Viewpoint of the Surgeon.” Illustrated.

William G. Hamm, M.D., and Jos. Hiram Kite, M.D., Atlanta, Ga.—“The Relief of Contractures of the Knee Following Extensive Burns.” Illustrated.

Walter G. Stuck, M.D., San Antonio, Texas.—“The Prevention of Deformities from Compound Fractures.” Illustrated.

Conrad G. Collins, M.D., New Orleans, La.—“Management of Abortion.” Illustrated.

2:30 p. m.

Gabriel Tucker, M.D., Philadelphia, Pa.—“Cancer of the Larynx, Diagnosis, Treatment and Results, with Observations on the Relation of Benign Tumors to Cancer.” Illustrated.

J. Duffy Hancock, M.D., Louisville, Ky.—“Mesenteric Tumors.” Illustrated.

Robert B. McIver, M.D., Jacksonville, Fla.—“Ureterocolostomy: A Study of Late Results.” Illustrated.

Edgar F. Fincher, M.D., Atlanta, Ga.—“Meningiomas.” Illustrated.

Murdock M. Snelling, M.D., Gulfport, Miss.—“The Treatment of Chronic Cervicitis and Allied Conditions With The Surgical Diathermy.” Illustrated.

Justus C. Pickett, M.D., Morgantown, W. Va.—“The Role of the Fascia in Low Back Pain.” Illustrated.

FOURTH DISTRICT MEDICAL SOCIETY

The Fourth District Medical Society met February 18 at Eureka. Dr. Adam Thorp of Rocky Mount gave a paper on “Interesting Phases of Eclampsia.” Dr. Henderson Irwin presented a case of extensive burns.

CUMBERLAND COUNTY MEDICAL SOCIETY

The medical officers and wives of the Veterans Facility entertained the Cumberland County Medical Society at their Ladies Night dinner meeting on Thursday, February 27, 7 p. m., Veterans Hospital. The medical officers and their wives from Fort Bragg and other distinguished guests were present at the meeting.

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society held a dinner meeting at the Robert E. Lee Hotel, Winston-Salem, on February 11. Dr. David T. Smith, of Duke University, spoke on “The Clinical Application of Recent Advances in Bacteriology and Immunology”.

HALIFAX COUNTY MEDICAL SOCIETY

The Halifax County Medical Society held its regular monthly meeting on Friday night, February 14, at the Roanoke Rapids Hospital.

A resolution was passed that the society sponsor a movement to have the new sanatorium at Wilson named in memory of the late Dr. T. W. M. Long, who until his death had worked tirelessly to obtain this sanatorium for eastern North Carolina. Many members paid tribute to their beloved colleague during the meeting.

The Honorable Buxton Midyette of Jackson, North Carolina, was guest speaker of the evening. His subject, “The Physician's Legal Liability”, was most instructive.

MECKLENBURG COUNTY MEDICAL SOCIETY

At the first monthly meeting of the Mecklenburg County Medical Society, held on February 4, the program originally planned for January 21 was heard. Dr. Raymond Thompson spoke on the "Present Status of Prostatic Surgery"; Dr. A. M. McDonald on "Umbrathor in the Diagnosis of Tumors of the Urinary Bladder"; and Dr. Aubrey Hawes on "Present Day Concepts in the Study of Male Sterility". On February 18 the Society heard papers on "Primary Peritonitis" by Dr. Charles Bunch, "Comparison of Hemorrhage and Hemograms in 100 Ear, Nose and Throat Operations With Cyclopropane, Nitrous Oxide and Ether Anesthesia" by Dr. Laurie Teasdale, and "The Use of Anti-Spasmodics in the Diagnosis of Lesions of the Upper Gastrointestinal Tract" by Dr. Phil Parsons.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The Thirty-Seventh Annual Congress on Medical Education and Licensure was held February 17 and 18 at the Palmer House, Chicago. Organizations meeting at the Congress were the Council of Medical Education and Hospitals of the American Medical Association, the Federation of State Medical Boards, and the Central Council for Nursing Education.

INSTITUTE OF INDUSTRIAL MEDICINE AND INDUSTRIAL HYGIENE

A "post graduate" Institute of Industrial Medicine and Industrial Hygiene, attracting industrial health specialists from all parts of North and South America, will be held in Pittsburgh, May 5 to 9. Scores of pertinent papers and discussions are scheduled on the medical and engineering phases of employee health protection.

The Institute marks the twenty-sixth annual meeting of the American Association of Industrial Physicians and Surgeons, and the second annual meeting of the American Industrial Hygiene Association. Majority of the sessions will be held at Pittsburgh's William Penn Hotel.

A series of important dry clinics in Industrial Medicine and Surgery will be held at Mercy Hospital on the first day, Monday, May 5. John P. Griffith, M.D., chairman of the hospital clinic committee and professor of surgery, School of Medicine, University of Pittsburgh, will be in charge.

PREPARED MATERIAL FOR PHYSICIANS

The Bureau of Health Education of the American Medical Association offers to local physicians the loan of prepared material for speakers addressing lay audiences. Even though a physician may be an able speaker, he frequently hesitates to accept invitations to speak before lay audiences because time is required to prepare material in suitable language for such audiences.

It is here that the Hygeia Clipping Collection loan service is of value. These collections consist of Hygeia material. They are patterned after the American Medical Association's Package Library. The advantage of this material is that it is written in non-technical language that the layman can understand. Thus, the physician is saved the effort of translating technical material into language easily understood by non-medical groups.

There are collections available on 82 topics; ac-

companying most collections is a speaker's outline. This outline is not intended as a fixed pattern which the speaker must follow but is merely offered as one way in which the material may be presented. As the physician reads the clippings, he may make his own notes on the outline and use only that portion of the material appropriate to his community.

The collections may be borrowed for a 10 day period and the only charge to the physician is the return postage for the bound material. Collections should be ordered at least two weeks in advance, and first, second, and third choice should be indicated since collections are not always available.

The demand for this material has grown tremendously the past several years. Several state medical societies, as well as a few county medical societies have found it to their advantage to develop speakers bureau library services of their own. In spite of the great demand for this material and the amount of publicity it has received, there are still a number of physicians who are not acquainted with the material offered by the Bureau. The practicing physician is not always a polished platform orator and welcomes aid of this type.

Loan Collections of Hygeia Material

Anesthesia	330.1
Anemia	92.1
Appendicitis and Laxatives	177.0
Athletics and Exercise	318.1
Blood Transfusions	131.0
Cancer	61.0
Child, Health of the Preschool	401.2
Child, Health of the School	401.1
Child's Health and His Future Career, The	291.0
Colds	151.4
Constipation and Cathartics	184.1
Communicable Diseases	47.1
Crippled Children	225.0
Deafness	121.1
Diabetes	74.1
Diet, Watch Your	302.4
Diseases, Nine Most Deadly	292.0
Doctors—City and County	322.1
Eyes, Adult's	120.1
Eyes, Children's	120.2
Family Medicine Chest, The	327.1
Feeding of Children	302.6
First Aid	349.0
Food, Drug and Cosmetic Racketeers	328.0
Food, Protection of	302.7
Gallbladder	180.1
Goiter and Other Glands	81.1
Growing Old Gracefully	261.1
Hair and Nails	236.0
Hay Fever—Allergy—Idiosyncrasy	305.1
Health Examinations	319.1
Health Examinations of Children	319.2
Healthy Living, Ten Points in	402.0
Heart Disease	150.1
Heredity and Eugenics	312.0
Hospitals	342.0
Industrial Health	348.1
Infant Hygiene	251.0
Infantile Paralysis	16.0
Kidneys	194.1
Leprosy	33.1
Maternal Hygiene	211.0
Mates or Mismates (Marriage)	426.0
Medical Advances, Outstanding	338.1
Medical Preparedness	347.0
Menstruation and the Menopause	208.0
Mental Hygiene—Adult	122.1
Mental Hygiene—Child	124.2

Milk	337.1
Narcotics	105.0
Nursing	343.0
Obesity	73.1
Physical Education	318.3
Physical Therapy, X-Ray, Radium	335.0
Pioneers of Medicine	338.2
Play, Leisure and Recreation	320.1
Pneumonia	154.1
Posture	228.1
Progress in Preventive Medicine	338.0
Public Health	332.0
Ringworm	233.1
Rheumatism	72.1
Safety	288.0
Sex Education	422.0
Skin	238.0
Superstitions	333.1
Surgery	310.0
Syphilis and Gonorrhea	34.1
Training for Athletics and Health	318.2
Teeth	172.2
Teeth, Children's	172.3
Tobacco and Alcohol	101.4
Tonsils and Adenoids	171.0
Tuberculosis	23.1
Tuberculosis in Childhood	23.2
Vacations	320.2
Ventilation	316.1
Youth	124.3

EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

Candidates for reexamination in Part II examinations must make written application to the Secretary's Office before April 15, 1941.

In accordance with the previously announced plans of the Board, the examinations to be given for the Board's fiscal year 1941-42 (ending with the Part II examination in June 1942) will be the last for candidates under Group A and B classifications. Applications must be in the Secretary's Office at least 90 days in advance of the announced examination dates, which dates are published in the various medical journals. Following the close of the final date for receipt of Group B applications (October 1941) and Group A applications (March 1942) all candidates will be considered in one classification by the Board, thus doing away with the junior and senior groups for examination, and all candidates will be required to take the Part I examination (written paper and submission of case histories) as well as the Part II examination (oral and pathology).

Military service will not affect the eligibility of any candidate so far as the Board requirements regarding limitation of practice are concerned. Military service will under no circumstances be considered as an infringement of any regulations outlined in this Board's booklet.

The Board requests that all prospective candidates who plan to submit applications in the near future request and use the new application form which has this year been inaugurated by the Board. The Secretary will be glad to furnish these forms upon request, together with information regarding Board requirements. Address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

A NEW JOURNAL ON MEDICAL CARE

The first issue of *Medical Care*, a quarterly magazine, appeared on January 21. The new journal is a nonprofit enterprise under the auspices of the Committee on Research in Medical Economics, Inc., 1790 Broadway, New York, with Michael M. Davis, Chairman of this Committee, as its Editor. Williams and Wilkins Company are the publishing agents. Its stated purposes are "to disseminate information concerning the economic and social aspects of medicine, to promote a scientific approach to the subject, and to stimulate practical action by the professions and the public in their common interest. The views and interests of the professions that furnish medical care and of the people who receive it are equally to be considered.

POST-GRADUATE COURSE IN OPHTHALMOLOGY

The George Washington University School of Medicine announces an intensive post-graduate course in ophthalmology to be held April 7-12, and a practical course in ocular surgery, pathology and orthoptics, limited to twenty-five participants, to be held April 14-19. The fee for the intensive course is \$50.00. The fee for the practical course is \$100.00. The participants will be accepted in the order in which they enroll for the course.

NEWS NOTES

Dr. O. L. Miller, Charlotte, was installed as President of the American Academy of Orthopedic Surgeons at its recent meeting in New Orleans.

* * *

Dr. Parker C. Hardin of Monroe and Dr. B. C. Willis of Rocky Mount read papers at the Post Graduate Assembly of the Southeastern Surgical Congress in Richmond on March 11. Dr. Hardin's paper was on "Cod Liver Oil Therapy of Wounds and Burns", and Dr. Willis' subject was "The Diagnosis and Treatment of Delayed and Immediate Traumatic Rupture of the Spleen, With Report of Cases."

* * *

Dr. Lacey Andrews, formerly associated with Dr. William Coppridge of Durham, has opened offices in Winston-Salem for the practice of urology.

* * *

Dr. Rowland T. Bellows, formerly assistant professor of Neurosurgery at the University of Rochester School of Medicine, has established offices for the practice of neurological surgery in the Professional Building at Charlotte.

* * *

Drs. Albert and Irene Kossove have recently opened offices for the practice of general medicine at 1516 Elizabeth Avenue, Charlotte.

* * *

Dr. E. J. Wannamaker, of Charlotte, has been appointed to the Moore County Award Committee to take the place of Dr. Thurman Kitchin.

Of the 22,000 recruits for the 6th Division of the Australian Imperial Force x-rayed last year, 109 had active pulmonary tuberculosis, undetected by the general medical examination. This is an incidence of just under one-half of one per cent or five per 1,000.

WOMAN'S AUXILIARY

ANNOUNCEMENT

Hotel Carter will be the headquarters for the Annual meeting of the Woman's Auxiliary to the American Medical Association which will be held in Cleveland, June 2-6, 1941. Requests for reservations should be sent immediately to Dr. Edward F. Kieger, Chairman of the Committee on Hotels and Housing, 1604 Terminal Tower Building, Cleveland, Ohio.

In Memoriam

DR. T. W. M. LONG

At a meeting of the Executive Committee of the Medical Society of the State of North Carolina in special session, February 9, 1941, a committee composed of Drs. James H. McNeill, George W. Mitchell, and D. W. Holt was appointed to express the deep regret of the Society at the untimely death of our fellow worker Dr. Thomas William Mason Long. The resolution follows:

RESOLVED: Whereas our Heavenly Father, the Great Physician, has seen fit to take from our midst our beloved friend and fellow worker, Dr. T. W. M. Long,

BE IT RESOLVED, that the members of the Medical Society of the State of North Carolina extend their deepest sympathy to his family and express our profound regret at his loss.

Dr. Long was graduated from the University College of Medicine, Richmond, Virginia, in 1908. He was licensed to practice medicine in North Carolina in 1909. He joined the State Society in 1910.

From Medical College he returned to his home town of Garysburg, North Carolina. There he did general practice for a year or two. He then moved to Roanoke Rapids, where he maintained his home until his death.

In that city, he organized, and for many years managed the Roanoke Rapids Hospital. Here, too, he managed to rid the county of malaria and was instrumental in establishing good public health procedures to such an extent that the region became a healthful one. Among the mill people of Roanoke Rapids he established procedures which assured good medical care for the low income group.

The combination of his personal popularity and his good public health work caused his election to the State Legislature about ten years ago. Since his first election, he has been repeatedly returned, and in later years, he was elected to the State Senate.

During the past fifteen years, Dr. Long has been on the managing boards of many of our State Hospitals.

Four years ago, he was elected Secretary-Treasurer of the Medical Society of the State of North Carolina, replacing Dr. L. B. McBrayer. Before and since that time he was most active in the affairs of the State Society, serving on many important committees.

The Medical Society wishes to express great appreciation for the excellence of his work and deep

sorrow at his untimely passing. To his family, we extend our most sincere condolence.

BE IT FURTHER RESOLVED that a copy of these Resolutions be sent to the family of the deceased, the Medical Society of the State of North Carolina, the North Carolina Medical Journal and the lay press, and same incorporated in the minutes of the Medical Society of the State of North Carolina.

Committee:

James H. McNeill, M.D.

D. W. Holt, M.D.

George W. Mitchell, M.D.

We, the members of the Wake County Medical Society, recognizing the great loss sustained by the State of North Carolina as well as by the medical profession in the passing of Doctor Thomas William Mason Long of Roanoke Rapids, do adopt the following resolutions:

Whereas, Dr. Long has taken an active interest in the public affairs of the commonwealth, unselfishly sacrificing his time and his finances in order to represent his district so ably in the Legislature, and

Whereas, Dr. Long has so unstintingly devoted his life to the advancement of the interests of the medical profession, having served actively on various boards, and during the past several years having devoted a large part of his time to the secretaryship of the Medical Society of the State of North Carolina:

Be it resolved that we join with his many other friends, with his family and with his many grateful patients in paying a fitting tribute to the memory of one who was so invaluable in promoting health, happiness and good government until his final summons came;

And that copies of these resolutions be sent to his family, to the State Medical Society, and to the State Senate.

(Signed) Felda Hightower
Verne S. Caviness
Committee.

BOOK REVIEWS

Clinical Parasitology. By Charles Franklin Craig, M.D., Emeritus Professor of Tropical Medicine, Tulane University, New Orleans, Louisiana; and Ernest Carroll Faust, Ph.D., Professor of Parasitology in the Department of Tropical Medicine, Tulane University, New Orleans, Louisiana. Second Edition, thoroughly revised. Price, \$8.50. Illustrated with 244 engravings. Lea and Febiger: Philadelphia, 1940.

The second edition of this book has been modified to include the important recent contributions in its field. The book was designed to contain in a concise form the essential facts concerning the animal parasites of man and the diseases which they produce, together with approved methods of diagnosis, treatment and control. It is much more than a college textbook in that it covers the entire field in a comprehensive fashion. There is a very good technical appendix and twenty pages of references covering the literature of clinical parasitology. This book is suitable for classroom use and is also an excellent reference book for physicians who come in contact with parasitic diseases. It ought to find a large field of usefulness in tropical medicine and public health work.

In Search of Complications. A Doctor's Autobiography. By Eugene de Savitsch, M.D. Price, \$3.00. Pp. 396. New York: Simon and Schuster, Inc., 1940.

H. R. Knickerbocker wrote of this book and of its author: "... If I have met one man I have met ten thousand, and of them all I testify the most interesting one is Eugene de Savitsch. And of all the books written in our time the most curious, insane, fascinating, amazing thing of its kind is his *In Search of Complications*."

The reader of *In Search of Complications* will certainly agree with the last two adjectives used by Mr. Knickerbocker. The book is so fascinating and so amazing from beginning to end that it is hard to put it down.

This book stands well apart from the general run of doctors' autobiographies which have appeared recently. Only the latter half of it can really be called "A Doctor's Autobiography", for the first half is the adventurous, almost incredible autobiography of a refugee from Red Russia who, after an interlude in Japan and a brief and gruesome career as an officer in the already defeated White army, came to America as an emigrant in 1923. The story of his vicissitudes in this country, of his research as a medical student, and of his experiences as an exchange student in Belgium and Africa is told in such a way that the reader's interest never flags.

Dr. de Savitsch's style is lucid and readable, and is touched throughout with a humor which is reminiscent of Hans Zinsser's. These qualities are all that is necessary to transform the diversified and amazing experiences of his life thus far into a dramatic and fascinating story. Dr. de Savitsch is yet a comparatively young man, and the reader hopes that, if the rest of his life is as exciting as the first part has been, he will publish some day a sequel to *In Search of Complications*.

A Surgeon Explains to the Layman. By M. Benmosche, M.D. 317 pages. Price \$3.00. New York: Simon and Schuster, 1940.

This book is well written and the author's ideas clearly expressed; but it is apt to do more harm than good. Many years ago Oliver Wendell Holmes advised the young practitioner that "Your patient has no more right to all the truth you know than he has to all the medicine in your saddle-bags. . . . He should get only just so much as is good for him." When a patient needs an operation for appendicitis, for example, it will hardly help his peace of mind to know that there are various pitfalls in the way of making a clear-cut diagnosis, and that it is comparatively easy to mistake another pain in the abdomen for that of appendicitis.

While most of the medical foundation of the book is sound, some of the statements are, to say the least, controversial. For example, in discussing spinal anesthesia, Dr. Benmosche says: "He (the patient) will have to be placed at a slight angle—with his head higher than his feet—so that the anesthetic in his spinal canal will not rush up toward his brain." This is certainly contrary to the experience and custom of the surgeons in our parts. Another questionable statement is that "a diseased gall bladder can cause a pain in the left shoulder." Maybe so—but certainly not often in this reviewer's experience. In discussing peptic ulcer only three theories as to its cause are mentioned: too much alcohol, too much smoking, or excessive nervous tension. More briefly, these causes might be called alcoholic, nicotinic, or neurogenic. A moment's reflection will rule out the first two factors, since every doctor is familiar with some ulcer patients who have never used alcohol or tobacco.

The trouble with such a book is that the well-balanced individual would hardly be interested in it; whereas the psychoneurotic type would revel in it. One wishes that Dr. Benmosche had used the literary talent which he undoubtedly has to write something of less doubtful therapeutic value.

New Squibb Product Provides Immunization Against Diphtheria and Tetanus

Diphtheria Toxoid-Tetanus Toxoid Alum Precipitated Combined, a combination product for convenience in producing active immunization against both diphtheria and tetanus, is now available under the label of E. R. Squibb & Sons, New York. Its advantage lies in the fact that children can be given protection against tetanus, without additional injections, while being routinely immunized against diphtheria. Furthermore, for those who have once been immunized with tetanus toxoid in this way, protection against tetanus following a subsequent injury is afforded by a single supplementary injection of tetanus toxoid. This eliminates the need for tetanus antitoxin (horse serum) and thus removes the risk of serum reactions.

Dosage consists of two 1-cc. injections given at an interval of two to three months or more. The product is supplied in packages of two 1-cc. vials, for one immunization treatment, and a 10-cc. vial for five immunization treatments.



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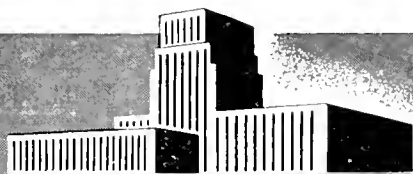
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*Arch. Otolaryng. 17:787, 1933



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SYMPOSIUM ON GALLBLADDER DISEASE

ETIOLOGY AND PATHOLOGY OF CHOLECYSTIC DISEASE

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CHARLOTTE

The primary functions of the gallbladder are the storage and concentration of bile, and the regulation of pressure within the biliary passages. Bile is secreted continuously by the liver, the amount being about 1 liter per twenty-four hours. Proportions of bile reaching the gallbladder are sometimes concentrated as much as ten times by aqueous absorption. Normally small amounts of bile salts and cholesterol are also absorbed. In addition to concentration, the viscosity of the bile may be further increased by the secretion of mucus and sometimes by the addition of cholesterol from the gallbladder mucosa.

The bile ducts are normally fibro-elastic tubes containing practically no muscle. Pain accompanying the passage of stones is due to distention of the ducts, with resultant pressure on the nerve endings. The nerve supply to the gallbladder and ducts is from the vagus nerve and the sympathetic system. Reflex irritation of these nerves accounts for much of the gastric symptomatology associated with gallbladder disease. With chronic cholecystitis there is frequently a progressive decrease of gastric acidity, and when complete achlorhydria occurs there is usually no return of acid secretion even after removal of the gallbladder.

Pathological conditions of the gallbladder are always secondary to disturbances in function or structure. Etiological factors include biliary stasis, infection, and derangement of the lipid metabolism, each contributing toward some type of cholecystic

disease. Stasis, *per se*, predisposes to infection and to the formation of gallstones. Stagnation of the bile within the bladder may be caused by: dietary factors, including inadequate intake of fats, proteins, and fruit juices; inflammation of the gallbladder; stricture, or obstruction of the cystic or common duct; hypertonicity or spasm of the sphincter of Oddi; duodenal conditions, including hypertonicity, inflammation or reverse peristalsis; various conditions of the colon.

Reflex contraction of the sphincter of Oddi has been shown experimentally to result from constipation, irritation of the colon, or stimulation of the various divisions of the splanchnic nerve. Clinically, it has been found necessary at times to eliminate spasm of the colon before the true status of the gallbladder could be evaluated. Further, the close relationship between cholecystopathy and abnormal functioning of the alimentary tract is indicated by the fact that the incidence of cholecystic disease is found to be doubled in persons with peptic ulcer, recurring appendicitis, or diverticulosis of the colon.

The mode of infection in cholecystitis is still a disputed point. It is thought by some to occur by way of the blood stream and presumably from foci in the oral cavity, as *Streptococcus viridans* is commonly found. Other investigators consider the commonest cause to be lymphatic transmission from the liver of the organisms normally present in the portal blood. The lymphatics of the liver capsule penetrate the wall of the gallbladder and would appear to give relatively easy access to the extensive bacterial flora, chiefly of intestinal origin, found in the liver. The importance of this lymphatic connection is shown by the frequent association of local hepatitis and cholecystic disease. Extension of infection by way of the biliary passages,

from either the duodenum or the liver, is considered rare. Against this possibility are: (1) The normal activity of the sphincter of Oddi, together with the fact that the duodenum is ordinarily sterile, especially when hydrochloric acid is present in the gastric contents. (2) The fact that the bile is normally bactericidal, no growth of organisms occurring when its concentration of salts is even 70 per cent of normal. Pathogenic organisms found in the gallbladder bile are usually in association with established cholecystitis. (3) The fact that the biliary mucosa is considered rather resistant to direct bacterial invasion.

Cholesterol anomalies of the gallbladder constitute a frequent pathological finding. Cholesterol is derived from exogenous and endogenous sources, and is also synthesized within the body. It is probably continuously formed and destroyed within the tissues. For practical clinical purposes the influence of diet on blood cholesterol may be disregarded. Further, there appears to be no constant relationship between the level of plasma cholesterol and its concentration within the bile. The elevation of cholesterol in both plasma and bile, occurring during pregnancy, is at present without adequate explanation.

Cholesterol in bile is held in loose chemical combination with the bile salts, and tends to be easily precipitated by increased concentration of the bile within the bladder. Normally there is no selective absorption of bile elements, though following infection it is thought that bile salts are rapidly absorbed and cholesterol is absorbed very slowly—if at all. Moreover, the inflamed gallbladder mucosa may even add relatively large quantities of cholesterol to the bile, due either to active excretion or to desquamation of cholesterol containing mucosa cells. Under circumstances not yet understood the gallbladder mucosa at times is found to be loaded with cholesterol, up to one hundred times the usual amount. This excess apparently is deposited in the mucosa after absorption from the bile. Cholesterosis is not regarded as a manifestation of cholecystitis, and is rarely found in the presence of advanced inflammatory or degenerative change. Cholesterosis, *per se*, does not produce symptoms; however, gallstones are found in one third of the cases.

Gallstones, in general, are made up in large part, and at times solely, of cholesterol;

their formation for the most part is metabolic in origin and apparently dependent largely on factors operating within the extrahepatic biliary tract. Snell believes that stones occur usually as a single shower of amorphous or finely crystalline material, bacteria rarely being the primary cause. In malignancies of the gall bladder, stones are thought to be a possible etiological factor, as they are found in 80 to 90 per cent of the cases.

Conclusion

Although much remains to be known relative to the pathogenesis of cholecystitis and cholelithiasis, it is becoming increasingly evident that gallbladder diseases are closely correlated with dysfunctions of other organs and probably represent secondary manifestations of general systemic conditions.

SIGNS AND SYMPTOMS OF CHOLECYSTIC DISEASE

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GREENSBORO

The history of cholecyctic disease dates back many centuries, but it was not until the seventeenth century that medical writings contained the report of a case wherein an attempt had been made to correlate the complaint of the patient with the findings at necropsy. The description of this case recorded three hundred years ago makes good reading. I quote as follows: "Horrible and stupendous calculi, coagulated in the gallbladder, their shape, color, number and wonderful effects, producing vomiting, nausea, heaviness, low spirits, tearing of the stomach and hypochondria, atrophy, tabes, obstruction of the viscera, inflammation, incurable jaundice, sleeplessness, lassitude, sadness and melancholic affections; inclination to anger, difficulty and heat of the urine, lepra of the skin, fever and sudden death."

That affections of the gallbladder and bile passages are exceedingly common among patients of middle age or older is well recognized. Pathologists put the incidence of gallstones in the adult population at from 5 to 20 per cent, and it is further believed that at least 50 per cent of all clinically significant cholecyctic disease is associated with calculi.

Patients of either sex frequently present a multiplicity of complaints referable to the

gastro-intestinal tract, and there is always a question as to how many can be attributed to the gallbladder, how many to pathology elsewhere, and how many to functional conditions. Snell and Walters refer to the gallbladder as the scapegoat of the abdominal organs. Certainly it is true that since the advent of surgery many innocent gallbladders have been removed. Therefore, let us consider the signs and symptoms that can be relied upon (1) as diagnostic of cholecystic disease, and (2) as criteria for operation. I shall discuss first the acute manifestations of cholecystic disease, and then the chronic.

Acute Cholecystitis

The clinical picture of acute cholecystitis is quite variable. In the absence of stones the process may be extremely mild; in the presence of stones the process may be most dramatic. In acute cholecystitis with stones the symptoms are more severe than in the non-calculous types, and they may come on with alarming suddenness.

Biliary colic is of course the most classical symptom of cholecystitis with or without stones. Attacks of colic usually arise in the right upper quadrant and radiate to the right subscapular region; occasionally the pain may be confined to the epigastrium or left upper quadrant; or it may originate in the back and simulate lumbago. Belching, nausea, and vomiting frequently accompany the pain. Pain referred to the neck or shoulder is usually indicative of local peritonitis with diaphragmatic involvement. The common sequelae of residual tenderness and slight fever help to distinguish true gallstone colic from the questionable variety. The development of icterus along with the preceding symptoms strengthens our diagnosis.

The dyspepsia of cholecystic disease is not confined to this condition, and may be observed in conditions such as reflex pylorospasm and aerophagia. The typical complaint of the gallbladder patient is that of distention, with belching, particularly after a fatty meal. Numerous vague symptoms such as vertigo, anorexia, headache and diarrhea are frequently mentioned. A tendency to remissions and exacerbations is also rather characteristic of this condition. Hypo-

chondriasis is a feature in some cases of cholecystic disease and often complicates an evaluation of the presenting symptoms.

The signs of cholecystic disease are often meager, as the patient frequently presents herself in the interval between attacks. A distended gallbladder may be felt, particularly if it is palpated shortly after the attack. Tenderness over the gallbladder fossa is frequently a conspicuous finding; occasionally heavy percussion over the lower ribs on the right side may elicit pain. Hyperesthesia of the overlying skin is frequently present. During the attack pain and tenderness are conspicuous (at the onset) in the epigastrium, later localizing to the right upper quadrant.

Chronic Cholecystitis

The clinical course of chronic cholecystitis varies immensely from the above picture. The symptoms are variable in the extreme, and cover almost a complete range of human ailments. In this group biliary colic is mentioned by only approximately 25 per cent of patients. Constant dull pain in the right upper abdominal quadrant, often aggravated by the taking of food is a common symptom; it should not be confused with true colic. Practically all patients have an intolerance to fats, coarse foods and heavy meals. Gaseous distention with bloating and belching is a common symptom and often cannot be attributed to any particular type of food. Regurgitation of food, pyrosis, and occasionally nausea and vomiting occur. Constipation with alternating diarrhea is common. Fever of low grade, and transient jaundice are occasional findings.

The chronic gallbladder, like the chronic appendix, seems to fall within that region on the borderline between functional and organic disease.

Summary

The following criteria for the diagnosis of cholecystic disease for which operation is advisable are submitted: (1) A satisfactory account of one or more attacks of biliary colic, with or without fever, chills or jaundice; (2) residual tenderness following these episodes; (3) flatulent indigestion with distress after full fatty meals; (4) cholecystographic evidence of non-functioning gallbladder or of stones; and (5) the exclusion of conditions that simulate cholecystitis.

ROENTGENOLOGIC CONSIDERATION OF CHOLECYSTIC DISEASE

W. T. RAINEY, M. D.

FAYETTEVILLE

Historically speaking, there are three natural epochs in the application of radiology to the visualization of the biliary tract. The first era covers the period from the discovery of the x-ray until 1910, during which time the composition, structure, and density of gallstones were of primary interest. The first demonstration of a gallstone in a living individual was in New York City by Beck, who later proved his finding at operation. The second epoch had its beginning in 1910 and ended with the discovery of cholecystography by Graham and Cole in 1923. This period was characterized by the study of infection, of the formation of gallbladder adhesions, and of their effect on surrounding viscera rather than of gallstones alone. Persistent research led to the advancement propounded in 1923 by Graham and Cole—the basis of modern cholecystography. They conceived the idea that the gallbladder could be rendered visible by the x-ray after being filled with a contrasting medium. This embodied a new and original radiological principle—the utilization of the specific function of a system to change the density of a secreted fluid. Cholecystography is, therefore, a test of physiological capacity in contradistinction to the wholly mechanistic nature of the opaque meal, pyelography, and the like.

On the basis of the work of Able and Rowntree, who had demonstrated that the phenolphthaleins as a class were largely excreted in the bile, Graham and Cole investigated phenolphthalein in combination with bromine and iodine, and found that, when injected intravenously, the dye was excreted in the bile. In this way, a sufficient quantity of halogen was obtained in the gallbladder to cast a shadow on exposure to x-ray. Calcium salts were tried but were soon replaced by the more soluble sodium salts. Shadows were obtained by intravenous, oral, and rectal administration. Once in the gallbladder, the bile and iodine or bromine became more concentrated because of absorption of water by the wall of the viscus. It is during this period of about twenty-four hours that shadows may be procured on x-ray films. The iodine is removed from the normal gall-

bladder as it empties, and with it goes the opacity to x-ray.

Many techniques of cholecystography have been developed, and numerous variations have been made by technologists. It might be stated that the two methods most commonly used are the intravenous and the oral. The intravenous gives more frequent reaction, but surer visualization. We use it in those cases not visualized by the oral method. The oral method, at the present time, seems to be the more popular, and, in general, consists of the following procedures: At 5 p. m., one drachm of paregoric is given to allay any gastro-intestinal upset which may follow taking the dye. At 6 p. m., dinner is taken (low in fat), and the dye is given immediately thereafter. The first plate is taken 16 hours later. Two hours later another film is made. Then a palatable fat meal consisting of a milk and cream mixture, some butter, etc., is given to the patient; three hours following this another film is made. This is twenty-one hours after the dye is ingested.

The number of films taken and the length of time between films varies with the technician. The double oral method may be used, particularly in patients with a thick abdominal wall, or in questionable cases where there is non-visualization. In the latter, this technique will increase the amount of available halogen, and will present a greater possibility of visualizing the gallbladder. Collins advises the use of pitressin in order to diminish the amount of gas present and to produce evacuation; this, he states, will make the film clearer, and will aid in interpretation. Antonucci propounds a method of rapid cholecystography, using the oral dose plus intravenous hypertonic glucose.

Reactions to the oral administration of the dye are relatively few in number, and may be listed as follows: nausea, vomiting, diarrhea, and abdominal cramps. Use of paregoric as stated above will frequently prevent these symptoms.

Contraindications to cholecystography are few. Among those most commonly mentioned are: cardiac disease with marked hypertension or hypotension; advanced liver disease; obstructive jaundice, (as it may lead to a fatal pancreatitis); and advanced pregnancy, in which cases the gallbladder usually cannot be visualized.

Cholecystographic criteria of the patho-

logical biliary tract may best be understood by the following classification:

1. Non-visualization of the gallbladder
2. Faint visualization of the gallbladder
3. Delayed visualization of the gallbladder
4. Deformities of the gallbladder
 - a. Congenital
 - b. Acquired
 - (1) Extrinsic
 - (2) Intrinsic
5. Cholelithiasis
6. Persistence of the gallbladder shadow
7. Excessive size of the gallbladder shadow.

With these criteria kept in mind, the interpretation of the cholecystogram will be greatly simplified.

Among the many conditions which may be mistaken for stones in the biliary tract may be mentioned calcified costal cartilages, opaque material in the bowel, renal calculi, calcified cystic gland, pancreatic calculi, superficial skin tumors, and calcified right adrenal gland. In spite of these possibilities for error, cholecystography has been reported from 60 to 95 per cent accurate in large series of cases numbering from 2,000 to 10,000. Our experience with this technique tallies well with the reports in the literature.

Criteria for the interpretation of the cholecystogram may be listed as follows:

1. If the gallbladder concentrates, alters its size, and empties, it is regarded as normal, regardless of the method of administration of the dye.
2. The following findings are indicative of a pathological biliary tract: non-visualization; finding of non-opaque stones; faint cholecystograms, indicating impairment of concentration and representing a loss of gallbladder function which is proportional to the degree of involvement; fixation and persistent deformity—"pericholecystitis"; constancy of size with lack of density; retarded appearance of the shadow; persistence of the shadow.

All of these criteria must be kept in mind and considered before interpretation of a cholecystogram will be significant.

We now turn to nomenclature and interpretation of roentgenograms. In separating the results of cholecystographic study, the following nomenclature is suggested:

1. *Functioning gallbladder.* Such a term would apply to a gallbladder which

shows good concentration of dye and good emptying after a fat meal.

- a. *Functioning gallbladder with stones.* This would include those gallbladders which show good concentration and emptying, but in which stones could be identified.

- b. *Functioning gallbladder with mural growths.* Such an interpretation would include those gallbladders which show good concentration and emptying power, but in which a filling defect remains in the same location.

- c. *Functioning gallbladder with adhesions.* This would mean that group which show good concentration and emptying, but which, because of their peculiar contour or location, indicate pericholecystic adhesions. This diagnosis is difficult and is added merely for the sake of completeness.

- d. *Functioning gallbladder with anomalies.*

2. *Partially functioning gallbladder.* Such a term implies an inadequate concentration of dye, poor emptying power, or tendency to enlarge after a fat meal.

- a. *Partially functioning gallbladder with stones.* This applies to those gallbladders which show poor concentration or emptying and in which stones can be demonstrated.

- b. *Partially functioning gallbladder with anomalies.*

3. *Abnormally functioning gallbladder.* This would include those cases in which there was very poor or no gallbladder visualization or those in which the gallbladder increased in size during the examination, thereby indicating a reversal of flow.

- a. *Abnormally functioning gallbladder with stones.* This would mean those cases with poor or no visualization in which opaque stones could be demonstrated.

- b. Milk of calcium bile.

- c. Calcified gallbladder.

- d. *Abnormally functioning gallbladder with anomalies.*

It might be interesting to discuss a few of the pathological conditions which may be found in cholecystograms. Non-calculous cholecystitis may produce a dense, faint, or absent shadow, the density of the dye de-

pending on the amount of damage to the wall of the viscus. Pericholecystic adhesions is a term widely used, but such a diagnosis is a most difficult one in the hands of the most efficient and is even then subject to error. Calculous cholecystitis, caused by opaque gallstones, presents a shadow, the density of which is dependent upon the amount and distribution of calcium. It is probably true that less than one third of gallstones are radio-opaque. Tumors of the gallbladder may also be visualized. Papillomas are usually small, single or multiple, and most often less than one centimeter in diameter. The diagnosis depends upon the finding of one or more clear oval or circular defects which remain constant with changes in position of the patient. Such a defect will always be adjacent to the wall of the gallbladder. They are most likely to be seen during the evacuation of the opaque dye from the gallbladder. Adenomas are usually larger and are most often found in the fundus. They too are most frequently found during the emptying phase of the gallbladder.

Failure of the gallbladder to diminish in size after the proper technique has been used may be due to mechanical changes in the cystic duct, to small valve obstruction of the cystic duct, to milk of calcium bile with or without a cystic duct stone, to spasm of the sphincter of Oddi, to anomalies, adhesions, and reflex phenomena from lesions outside the biliary tract.

Increase in size of the gallbladder may be seen occasionally.

Practically all of the conditions which interfere with the emptying of the gallbladder or even increase its size have been loosely grouped under the heading of "dyskinesia" of the gallbladder. Further investigation is necessary to evaluate the meaning of this term.

Anomalies which may be found in cholecystography are relatively rare but should be mentioned. They may include congenital absence of a gallbladder, double gallbladder, diverticula, changes in position, and Phrygian cap deformity.

Conclusion

Cholecystography may be said to be an accurate but not infallible means of detecting disease of the biliary tract. It is not a procedure to be used injudiciously without

proper regard for the many considerations which may affect the correct interpretation of the film.

AN EVALUATION OF LABORATORY PROCEDURES IN CHOLECYSTIC DISEASE

ERLE B. CRAVEN, JR., M. D.

LEXINGTON

According to a recently published textbook on DISEASES OF THE GALLBLADDER¹, "By far the most important laboratory procedure in the diagnosis of diseases of the gallbladder is, of course, cholecystography." This subject has been ably covered by Dr. Rainey, and I should be reluctant to use your time for a discussion of procedures which are seldom of direct diagnostic aid. However, because gallbladder sufferers are so frequently the victims of other associated diseases, the clinical laboratory is often an aid in the evaluation of the total status of the patient even though it fails as a positive diagnostic agent in cholecystic disease alone.

Examination of the Urine

In the absence of biliary obstruction or hepatic cell necrosis, examination of the urine gives little help. Albuminuria, cylindruria, and occasionally glycosuria may follow acute cholecystitis or biliary colic. If biliary obstruction occurs or if there is hepatic cell necrosis sufficient to allow regurgitation of bile into the blood stream, the urine will be stained with bile, and bile-stained casts may be seen under the microscope. Tests for urobilin and urobilinogen are unsatisfactory in the presence of bilirubin, but if these constituents are present in abnormal quantities it is evident that total biliary obstruction does not exist, since these products are derivatives of the intestinal bilirubin.

Examination of the Blood

It is assumed that appropriate serological tests are made in every case, as it is of the utmost importance to exclude tabes and visceral syphilis.

The red cell sedimentation rate may be accelerated in the presence of acute or chronic infection, and in about half the cases

1. Walters, Waltman and Snell, Albert M.: Diseases of the Gallbladder and Bile Ducts, Philadelphia, W. B. Saunders Company, 1940.

leukocytosis occurs; however, the help to be derived from these studies is of a general nature only and of no specific diagnostic value.

Anemia is an uncommon finding in uncomplicated cholecystic disease, and, where it occurs, it is usually attributable to general malnutrition, frequently from unwise dietary measures. If anemia is present, blood tests must be made to demonstrate possible hemolytic icterus or pernicious anemia.

Even without clinical icterus there may be hyperbilirubinemia, and here the van den Bergh reaction properly interpreted will be of great value. If we could abolish from our reading and our thinking the standard textbook classification of *obstructive* and *non-obstructive* jaundice and for this substitute a conception of *regurgitative* and *retention* jaundice, as proposed by Rich⁽²⁾, the qualitative van den Bergh reaction would acquire greater significance. Without entering into a discussion of the theory of the indirect and direct reactions, it is sufficient for clinical purposes to know that the direct reaction is evidence of entry into the blood stream of whole bile—that is, bilirubin which has passed through the hepatic cells and become mixed with the other constituents of the bile. Obviously, then, whole bile in the blood, bile pigment in the urine, and acholic stools may be due as easily to hepatic cell destruction, which would allow regurgitation of bile into the blood, as to classical obstruction of the bile ducts. Rapidly fluctuating values for serum bilirubin, particularly following bouts of pain, are almost diagnostic of obstruction by stone, whereas a fixed high value for serum bilirubin is nearly always associated with obstruction due to neoplasm.

The indirect reaction tells us that bilirubin which has not been excreted by the hepatic cells is in the serum in abnormal quantities, as a result of an inadequate *rate* of excretion by the hepatic cells. This inadequate *rate* of excretion may be due either to an abnormal accumulation of the products of blood destruction or to a functional slowness of hepatic cell excretory activity, or more commonly, to both. Where the van den Bergh reaction is indirect there will be bile and urobilinogen in the intestine, and urobilin, but not bilirubin, in the urine.

Other chemical constituents of the blood

which may be changed by some of the results of cholecystic disease are the blood urea and chlorides. After severe vomiting, the former may be elevated and the latter diminished. Blood dextrose may be elevated, usually because of associated mild or latent diabetes. Pancreatitis arising because of stones in the common duct or direct extension of infection may cause significant elevations of the serum lipase and amylase. Significant reduction in the albumin fractions of the serum proteins may result if hepatic cell damage is extensive.

The prothrombin clotting time of blood plasma is increased in the regurgitative type of jaundice, apparently because bile in the intestine is essential for the proper absorption of vitamin K, the precursor of prothrombin. There is accumulating evidence, however, that the liver is the seat of formation of prothrombin and that liver disease, *per se*, may give rise to increased prothrombin clotting time.

Examination of the Gastric Juices

For many years it was believed that there existed a close association between cholecystic disease and achlorhydria and hypochlorhydria. Actually, when the figures are broken down with relation to age and sex there does not appear to be any significant statistical correlation.

The Liver Function Tests

These are of limited value unless there is an associated hepatitis. For convenience, the tests may be divided into those that test the excretory powers of the liver and those that are based upon the metabolic functions of the liver. Examples of the former are the quantitative van den Bergh reaction and the bilirubin-excretion, the bromsulfalein, and the rose bengal tests. In each of these tests the material is injected intravenously, and after the lapse of a specified interval of time the concentration in the serum is determined, and the rate of excretion is estimated from the quantity retained in the serum. These tests will be of no value, of course, if biliary obstruction exists; obviously, whether it is damaged or not, the liver cannot excrete the injected substances if the exit is closed.

Tests based upon metabolic functions of the liver may be of considerable value, since they are applicable even in the presence of jaundice. The levulose and galactose toler-

2. Rich, Arnold R.: The Pathogenesis of the Forms of Jaundice, *Bull. Johns Hopkins Hosp.* 47:338-377, 1930.

ance tests are measurements of the liver's ability to convert these substances to glycogen. Of the two, the galactose test is much simpler technically and apparently of equal value. The patient fasts for twelve hours, and is then given 40 Gm. of galactose in 500 cc. of water. Normally, or in jaundice due to biliary obstruction, 3 Gm. or less are excreted in five hours; where there is hepatic cell destruction, the urinary excretion may be 4 or 5 Gm. or more in five hours.

The hippuric acid test calls upon a detoxicating function of the liver—that is, the synthesis of hippuric acid from ingested benzoic acid. One method is to give 5.9 Gm. of benzoic acid orally, and to determine the quantity of hippuric acid excreted hourly in the urine for four hours thereafter. If the liver possesses some reserve, from 3 to 3.5 Gm. are excreted within this time.

It should be kept in mind that the above tests are purely functional. A negative result does not necessarily indicate the absence of liver injury. When it is remembered that McMaster and Rous have shown that, in the dog, 95 per cent of the excretory function of the liver could be abolished before jaundice appears; and that Mann has found that 80 per cent or more of the liver could be removed without a fall in urea production, it is obvious that liver disease may exist without its condition being revealed by any of these means.

Duodenal Drainage

It would seem that this procedure should be of inestimable value in determining the presence and extent of biliary tract disease. Indeed, following its introduction by Lyon there were for many years enthusiastic advocates of the method. Because it has been generally accepted that gallbladder bile or the so-called "B" bile could be obtained in a practically pure state from the duodenum after appropriate stimulation of the gallbladder by fats, magnesium, or pitressin, it was felt that a study of this B bile would yield valuable information concerning the condition of the gallbladder itself. Unfortunately, the very authenticity of this B bile has been questioned, particularly by Lintz, who found characteristic B bile in the duodenum of a patient whose gallbladder was congenitally absent. Although it is a reasonably safe assumption that the B bile is derived from the gallbladder, failure to aspi-

rate B bile is not necessarily due to pathologic change in the gallbladder or to occlusion of the cystic duct. Perhaps the single most valuable result of duodenal drainage lies in the repeated demonstration of complete absence of intestinal bile: this, in the presence of jaundice, is almost certain evidence of neoplastic occlusion.

The bile, once obtained by duodenal drainage, may be studied by a variety of methods:

1. Its general appearance and physical properties may be noted; however, because of the unavoidable admixture of gastric and duodenal juices, these observations, in general, are of doubtful value.

2. Microscopic examination of the cellular constituents, even though it shows the presence of red cells, leukocytes, and epithelial cells, is not necessarily diagnostic of biliary tract disease, since the source of those cells cannot be proved with certainty. Also, even with immediate fixation, there is a variable degree of digestion.

3. The demonstration of cholesterol and calcium bilirubinate crystals in combination is, according to workers of considerable experience in the crystallography of the bile, almost certain evidence of the presence of gallstones; and the absence of these crystals they believe to be equally good evidence of the absence of stones.

4. Bacteriological studies have, so far, yielded disappointing results. For more than two years I cultured innumerable specimens of bile obtained by duodenal drainage, and I cannot say that in more than 2 or 3 cases the results were of any significance. When it is remembered that even in acute cholecystitis, cultures taken at operation are more often sterile than not, and that in chronic inflammation the percentage of positive cultures is very low, it is not particularly surprising that in duodenal drainage, with its widespread chances of contamination, the bacterial growth, if any, seems to bear little relation to the observed disease.

5. Chemical studies have shown that the ratio of cholesterol in the bile to bile salts is an important factor in the formation of gallstones. In normal bile this ratio is between 1:20 and 1:30. According to Andrews, deposition of cholesterol occurs when the ratio falls to 1:13. The hydrogen ion concentration is also said to be of importance in the formation of stones, a pH toward the alkaline side favoring precipitation of calcium salts.

Conclusions

While it remains a possibility that laboratory methods, some of which I have very briefly discussed, in the hands of workers thoroughly familiar with the microscopy and chemistry of the bile have definite value, to most clinicians the laboratory is probably of limited aid. My own impression, after a modest experience with most of the procedures enumerated, is that we still need more and better methods.

DIAGNOSIS OF GALLBLADDER DISEASE

(Correlation of History, Physical Examination, and X-Ray Evidence)

WINGATE M. JOHNSON, M. D.

WINSTON-SALEM

Many years ago Dr. David Riesman began a paper with a sentence which is even more appropriate now than then: "The upper abdomen is to the human body what the Balkan states are to Europe—a constant source of strife and unpredictable events." Of the abdominal Balkans, the gallbladder is perhaps the most important. It is the most common cause of digestive disorders in the latter half of life.

Since acute cholecystitis is comparatively easy to recognize, and is not nearly so frequent as is chronic gallbladder disease, only the latter will be considered in the brief time at my disposal.

Predisposing Factors

In the diagnosis of chronic cholecystitis, it is helpful to recall the predisposing causes. First is age; gallbladder disease is far more common after 40, though it may occur earlier. Next is sex; three times as many women as men are affected. Pregnancy perhaps accounts chiefly for this. Dr. W. J. Mayo⁽¹⁾ found that 90 per cent of women operated on at the Mayo Clinic for gallstones were mothers. C. J. Watson⁽²⁾ states that, while 5 to 10 per cent of adults are found to have gallstones at autopsy, probably 20 per cent of women who have borne children are so affected.

1. Zech, R. L.: Relation of Gallstones to Pregnancy; Report of Case, *Northwest Medicine*, 29:468, 1930.
2. Watson, C. J.: Diseases of Gallbladder and Bile Ducts, in *Cecil: Textbook of Medicine*, ed. 5, Philadelphia, W. B. Saunders Co., 1940, p. 868.

Another factor of considerable importance is that of weight, since the proportion of cholecystitis is considerably higher in the heavyweight division. Excess weight is often associated with the habit of eating heavy, greasy meals. Irregular meals, especially the omission of the mid-day meal, predisposes to cholecystitis by the stagnation thus produced.

A sedentary occupation is another predisposing factor, all the more influential if pursued by one who is a valiant trencherman.

Previous infections, especially typhoid fever, are to be considered. There are still enough of the older generation who have had typhoid fever to make this an important factor. The intestinal type of influenza—which may have been a disguised attack of acute cholecystitis—is not infrequently followed by gallbladder symptoms.

History

The past history is of great importance in the diagnosis of cholecystitis. The part played by pregnancies, especially repeated pregnancies, should be emphasized. The patient with gallbladder disease will usually tell a story of repeated or persistent digestive discomfort. The most common symptoms noted are a feeling of fullness after eating; eructations, frequently sour; and a sensation of pressure around the waist, as if the clothing is too tight. Often the patient, if a man, will unfasten the lower buttons of his vest, or loosen his belt after meals. The patient may state that he sits down to the table hungry, but feels full after a few mouthfuls. Another frequent complaint is that he cannot eat fried or greasy foods without discomfort. A clinical test that is sometimes employed is to have the patient eat a fatty meal as a provocative test.

Attacks of colic with typical radiation to the epigastrium and under the right shoulder blade may be described. These are not necessarily severe enough to require a hypodermic; individuals vary so in their reaction to pain that the personal equation must be considered. One may endure without a sound an attack that would require repeated doses of morphine in another. A rather striking characteristic of biliary colic is its tendency to come at night. A possible explanation for this is that a hearty meal is apt to precipitate such an attack, and many, if not

most individuals make the evening meal their heaviest one.

Another significant sign is jaundice, particularly following an attack of colic. Of almost equal import is the patient's statement that he has noticed highly colored urine and pale or white stools.

Physical Examination

Upon examination the victim of chronic cholecystitis will usually, though by no means always, be overweight, and in the latter half of life. The tongue is usually coated. The conjunctiva, more often than the skin, may be found to have a yellowish tinge. This, it is hardly necessary to recall, can be seen only in daylight, never by artificial light. In the presence of jaundice, the pulse may be slower than normal. The abdomen is very apt to be somewhat tympanitic. With the patient lying flat on his back, there is often some tenderness and less often muscular rigidity over the right upper quadrant. By making equal and simultaneous pressure with the thumbs under each costal margin after the patient has taken a long breath, it may be possible to elicit greater sensitiveness on the right side. Another method⁽³⁾ is to strike just below each costal margin with the ulnar border of the extended hand.

Laboratory Tests

Of the laboratory tests, the examination of the urine for the presence of bile and of the stools for its absence are the oldest and still the most important; and here the evidence of the naked eye is usually all that is necessary. The galactose tolerance test is the simplest and perhaps the most useful in determining liver damage. The van den Bergh reaction is chiefly of value in recognizing the type of jaundice.

X-Ray Examination

In the diagnosis of cholecystitis, by far the most important supplement to a careful history and physical examination is the x-ray. Approximately 30 per cent of gallstones can be shown by a carefully taken flat plate alone⁽⁴⁾, but with the gallbladder dye this proportion should be increased to at least 70 per cent. About 5 per cent more can be added if a film is taken with the patient in

the upright position, after he has remained upright long enough to allow the heavier dye to settle to the bottom, with the lighter bile above⁽⁴⁾. The stones may then be found in the zone between these two layers.

A diseased gallbladder, without stones, is not visualized normally after the dye is given; it is either not seen at all or gives a light shadow. Delayed emptying after a fat meal is also considered pathological, but this is not nearly so significant as failure to obtain normal visualization.

Before accepting too willingly, however, an x-ray diagnosis of a non-functioning gallbladder, one should be quite certain that the patient took the dye, that he retained it, and that he did not eat a fatty meal afterward. If he vomited or had a profuse diarrhea shortly after taking the dye, it may not have been absorbed in sufficient quantity to outline the gallbladder. Most x-ray men now, I believe, give enough paregoric to ensure retention of the dye. Too much fat with the evening meal may cause the dye to leave the gallbladder before the film is made. On account of the frequently severe reactions following the intravenous use of dye, that method has largely been abandoned, though some claim that it is superior to the oral administration. In one patient of mine, removal of a "non-functioning" gallbladder was advised, because of failure to visualize it. The failure was explained when the patient showed me what felt like a plaster cast of a foot-long section of his median basilic vein.

Summary

In closing, I would like to emphasize that, while the laboratory and especially the x-ray are very important aids in the diagnosis of cholecystitis, the final decision must be based upon the clinical history and examination. There is no other medical problem that requires more seasoned clinical judgment than does the correlation of the history, the examination, the laboratory and the x-ray findings in the diagnosis and treatment of chronic gallbladder disease.

The Importance of a Clinical Examination. — A physician who says he has not time to make a clinical examination, has not time to practice medicine. The prescribing of remedies which do not remedy any more than the various patent medicines, or the application of physical methods of treatment when not indicated, or the creation of an air of mystery is not the practice of medicine.—Warner S. Bump: Medical Opportunities in a Small Urban Community, Wisconsin Medical Journal, 39:978 (November) 1940.

3. Method used by David Riesman, as related by F. R. Taylor.

4. Rousseau, J. P.: Personal communication.

THE DIFFERENTIAL DIAGNOSIS OF CHOLECYSTITIS

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ASHEVILLE

I can do little more in the time allotted me than give a list of the various conditions which can be and sometimes are confused with cholecystitis. I believe it would be wise to divide this subject into two parts: first, the differential diagnosis of acute cholecystitis, and second, of chronic cholecystitis. The conditions which may so closely mimic acute cholecystitis as to cause difficulty in diagnosis are as follows:

- (1) Acute appendicitis.
- (2) Acute right renal disease, including pyelitis, infected hydronephrosis, impacted stone and abscess.
- (3) Ruptured or perforating peptic ulcer.
- (4) Acute hepatitis, including catarrhal jaundice, liver abscess and the like.
- (5) Acute pancreatitis and more rarely chronic pancreatitis or carcinoma of the pancreas.
- (6) Acute upper intestinal obstruction, including mesenteric thrombosis.
- (7) Hemolytic crises of hemolytic jaundice.
- (8) Acute right basal pulmonary disease.
- (9) Coronary thrombosis.
- (10) Gastric crises of tabes.
- (11) Herpes zoster.
- (12) Black Widow spider bite.

How can these various pathological conditions involving so many different structures possibly be confused with acute cholecystitis? The answer to this question lies in the fact that they are often characterized by upper abdominal or even right upper quadrant pain, varying degrees of tenderness, rigidity, nausea and vomiting. The pain may be referred to the back or to the right shoulder, and fever, leukocytosis and jaundice may all supervene.

A detailed consideration of these various conditions is neither necessary nor possible. We all know that the tenderness of appendicitis can usually be localized to the middle or lower abdomen and that of renal disease to the costo-vertebral angle. We know that urinary findings are frequently diagnostic. We know that an x-ray plate taken in the erect position will often show free air in the peritoneal cavity in cases with ruptured ulcer, or loops of small bowel distended with

gas and fluid in cases with small bowel obstruction. Our judgment is apt to be reasonably sound in such cases, but when it comes to a consideration of acute hepatitis, many errors are still made. There is a prevalent belief in the mountain sections of this state that pain plus jaundice invariably spells cholecystitis with stones. Catarrhal jaundice is thought to be due to a plug of mucus obstructing the common duct.

Acute pancreatitis is another frequently mis-diagnosed condition. Almost invariably it is called biliary colic or acute cholecystitis. Of course, in the fulminating cases of hemorrhagic or necrotic pancreatitis a correct diagnosis is based upon the terrific intensity of epigastric pain with radiation towards the left and to the back, the state of shock with rapid pulse, low blood pressure, and cyanosis, and the lack of fever and abdominal rigidity. Milder cases mimic acute cholecystitis so perfectly as to be clinically indistinguishable. Of course, the two conditions frequently co-exist; but in many instances, nothing but pancreatitis is found at operation. Since these milder forms of pancreatitis go on to resolution without surgery, it is important that they be recognized pre-operatively. A higher threshold of suspicion for this disease, plus the routine use of the blood amylase determination will serve to uncover many an otherwise unsuspected case.

As far as the differential diagnosis of coronary thrombosis, pneumonia, gastric crises and herpes zoster are concerned, it goes without saying that rarely is the need for surgery so imperative that one cannot take time to check the blood pressure and assay the condition of the circulatory system. One can, without criticism, delay the operation long enough to uncover the patient's chest, observe the type of respiration and even pass the stethoscope here and there over the lung fields. A patient with gastric crises or herpes zoster will rarely be subjected to exploration if the examining physician will use but two or three of his five senses in making a decision. I now have a patient who was explored within an hour of his admission to a hospital during an attack of gastric crisis. Such unseemly haste is rarely necessary unless the picture is unequivocally that of an acute surgical emergency. It seems to me that our first effort, in the differential diagnosis of cases simulating acute cholecystitis, should be to decide as promptly as possible whether the problem is one for immediate

surgery or one for medical management. If we make this decision promptly and correctly, we have discharged a large part of our obligation to the patient.

Now as far as chronic cholecystitis is concerned, the following conditions must be considered in differential diagnosis:

- (1) Duodenal ulcer.
- (2) Chronic or recurrent appendicitis.
- (3) Chronic right renal disease.
- (4) Subacute hepatitis or cirrhosis.
- (5) Chronic pancreatitis and carcinoma of the pancreas.
- (6) Chronic gastritis.
- (7) Disease of the dorsal spine.
- (8) Nervous indigestion.
- (9) Irritable colon syndrome.
- (10) Fatigue or occupational ache.
- (11) Migraine.

Many of these conditions may give rise to a low grade indigestion characterized by epigastric distress, fullness or vague pain soon after the ingestion of food. Episodes of epigastric colic with nausea, vomiting and even a little fever and jaundice may occur, or there may be right upper quadrant ache or pain with associated subscapular distress. I propose to say nothing about the organic conditions such as ulcer, appendicitis and hydronephrosis; it is axiomatic that they must be differentiated from chronic cholecystitis. I do wish to say a few words about that large group of patients who suffer from functional disease simulating cholecystitis. I can honestly say that more than 50 per cent of patients referred to me because of suspected chronic gallbladder disease prove to have no evidence of cholecystitis whatsoever. These are the biologically substandard people, obviously nervous and exhausted. They sleep poorly and awaken from sleep more tired than when they went to bed. They are usually constipated, suffer from headaches, anorexia and bad taste in the mouth. They have dull soreness or burning discomfort in the right upper quadrant. They have multiple complaints and are harassed by an overload of worry and work. Many have had appendices, ovaries and adhesions removed without benefit. Cholecystograms often show a dye-filled gallbladder that empties slowly and incompletely after the fat meal. What I wish to emphasize is that these people should not be operated upon. Rarely, if ever, are they relieved of their symptoms. They would do better to

spend their operative fee on a vacation away from home and family, or on a few weeks' stay in a rest sanatorium. All too frequently their symptoms are intensified by cholecystectomy and they wander hopelessly from doctor to doctor and finally to the quack.

Before closing this discussion I should like to mention fatigue or occupational ache. During the current year, I have seen two women with this condition. Both were referred to me because of "gallbladder disease." They complained of right upper quadrant and right subscapular pain of a dull, aching quality. One had no indigestion until she was told she had cholecystitis; then she promptly developed nervous indigestion. The other had a marked disturbance of digestion which disappeared entirely during a stay at the beach in an American Plan hotel where she ate everything on the menu in order to "get her money's worth." Both of these women were telephone operators and spent long hours, under constant nervous tension, sitting erect in poorly designed chairs which gave no support to the back. They used their right arms constantly while completing connections. Small wonder that they developed fatigue in the right side of the upper body! Both were relieved of symptoms by an explanation of the mechanism of their production, with adequate support to the back during working hours.

In conclusion, I wish to state as emphatically as possible that a good practical rule to follow in these patients with a chronic cholecystitis syndrome is to advise operation rarely, if ever, unless careful investigation has disclosed undoubted evidence of frank organic disease of the gallbladder. The degree of relief of symptoms from cholecystectomy is in direct proportion to the severity of pre-operative symptoms. Those who possess stones and have had frank gallbladder colics are almost entirely relieved by operation. Those who merely belch and complain of vague distress usually continue to do so after cholecystectomy.

Mind and Body.—In all your patients whose symptoms are of functional origin, the whole problem of diagnosis and treatment depends on your insight into the patient's character and personal life, and in every case of organic disease there are complex interactions between the pathologic processes and the intellectual processes which you must appreciate and consider if you would be a wise clinician.—Francis W. Peabody: *Doctor and Patient*, New York, The Macmillan Co., 1939.

THE MANAGEMENT OF CHOLECYSTIC DISEASE

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The Management of Cholecystic Disease

For convenience, a discussion of the management of cholecystic disease may be considered under three headings: (1) acute cholecystitis, (2) chronic cholecystitis without stones, and (3) chronic cholecystitis with stones. In the limited time at my disposal only a brief outline of the general principles of treatment will be discussed.

Acute Cholecystitis

For many years, the profession has felt that acute cholecystitis, in the usual case, should be treated conservatively. Bed rest, sedation, heat locally (but some prefer the ice bag), and fluids, either by mouth or parenterally, are all indicated. After subsidence of the attack, cholecystectomy is usually recommended. In empyema of the gallbladder, once the diagnosis has been made, operation should be performed at once, removing the gallbladder if possible.

In recent years, however, there has been a tendency to advise cholecystectomy in the acute case, provided the patient is seen early. Whenever this subject is discussed, I am painfully reminded of a patient seen several years ago who had an acute gallbladder attack. Both the surgical consultant and I agreed to treat her conservatively; she failed to improve, and finally developed signs of peritonitis. At operation she was found to have a perforated gallbladder, a stone having eroded its wall, and needless to say she failed to recover. Since then I have been much more inclined toward early operation. I do not for a moment imply that all patients with acute cholecystitis should be operated upon at once, but in certain selected cases cholecystectomy is indicated and may well prove to be a life-saving procedure.

Chronic Cholecystitis Without Stones

The treatment of gallbladder disease in the absence of acute cholecystitis or biliary colic has long been a subject of vigorous debate. There was a time, not so long ago, when many favored cholecystectomy—or, at

least, surgical drainage of the gallbladder. However, it has become more and more apparent that many of these patients have not been relieved by operation; indeed, some have become much worse, and, generally speaking, operation for chronic gallbladder disease in the absence of colic has fallen into disrepute.

Since operative interference in this type of case has proven so unsatisfactory, the question naturally arises, "What does the internist have to offer?" Before answering this question it should be pointed out that the symptoms of chronic cholecystitis are extremely variable; that one patient may complain of gas and fullness after heavy meals; another of vague discomfort if not actual pain beneath the right costal margin; another of heart burn, eructation and so forth. It is recognized that many patients whose gallbladders appear to be normal by x-ray may present exactly the same picture as the so-called "typical gallbladder syndrome", and it is also known that many patients who at operation or at autopsy have a chronic cholecystitis may have had no symptoms whatever referable to the gallbladder. Since these are well established facts, one wonders if the symptoms observed in patients having x-ray evidence of gallbladder disease are in reality due to this disease or to other factors.

The medical management of gallbladder disease is largely a matter of treating the patient symptomatically—a problem in treatment of the patient rather than of the disease. There are several aspects of therapy to be considered: (1) diet, (2) daily routine, (3) drugs, and (4) duodenal drainage.

Diet: The diet in the treatment of gallbladder disease is important. If the patient is overweight—and most of them are—a reduction diet is indicated. In general one should avoid fried, greasy, and obviously indigestible foods; but it is unnecessary and unwise to attempt to eliminate fats altogether. It should be borne in mind that fats in the duodenum are the best stimuli known to gallbladder contraction. A well-balanced bland diet, including a variety of meats and green vegetables should be insisted upon.

Daily Routine: Regularity of habits of eating (small meals at the same time each day) is important, and some exercise and recreation are indicated. Avoidance of fatigue is desirable, and particularly avoidance

of nervous strain, as it is well recognized that gallbladder attacks frequently follow increased nervous tension. A careful regulation of the bowels is, of course, of the greatest importance, but it should be accomplished by correct habits, not by drugs.

Drugs: It is my belief that drugs have very little place in the treatment of the average patient. Mild laxatives may be necessary occasionally, or even small doses of sodium phosphate. Bile salts are of no particular value, except when given along with vitamin K in jaundiced patients. An ounce of olive oil once or twice a week frequently is beneficial. For attacks of vague discomfort or a low "grumbling pain" beneath the right costal margin, one should try heat and antispasmodics, such as atropine, nitroglycerine or calcium gluconate intravenously.

Duodenal Drainage: Duodenal drainage may afford marked relief in some patients, but there is some doubt as to the mechanism of action of this procedure. Possibly the improvement in the patient's sense of well being is due to emptying of the gallbladder, but again the whole thing may be psychogenic. At any rate, it is excellent psychotherapy and a procedure which should not be discarded.

Chronic Cholecystitis With Stones

As has been pointed out earlier in this discussion, gallstones frequently are found at operation or at autopsy in patients who have never had an attack of colic or even of any digestive disturbances which could be attributed to the gallbladder. Therefore, the removal of gallbladders just because stones are demonstrated is hardly justifiable. If, however, the patient has been having recurrent attacks of colic, then cholecystectomy is obviously indicated. Occasionally one is required to treat such patients when operation is refused or contraindicated for some other reason. The same principles apply as in cases of acute cholecystitis—namely, heat locally, antispasmodics, sedation (not morphine unless pain cannot be controlled with antispasmodics), and intravenous glucose.

In conclusion, it should be emphasized that the management of cholecystic disease is an individual matter; that no set rules can be laid down for the handling of every case; that each patient constitutes his own particular problem and the therapy advised will be determined by a careful consideration of all the factors present.

THE PSYCHONEUROSES

FREDERICK R. TAYLOR, M.D., F.A.C.P.

HIGH POINT

A psychoneurosis is a symptom-complex arising from a fixation of emotional reactions. The symptoms may be mental, such as preoccupation, anxiety, or failure of concentration; or physical, such as faintness, vomiting, palpitation, etc. The shorter term "neurosis" often is used synonymously with "psychoneurosis". A psychoneurosis differs from a psychosis in that it occurs in people who live in the same intellectual frame of reference as their neighbors, whereas in a psychosis there is always some region of thought where phantasy has become reality. (Ross).

The psychoneuroses are not simply common; they are practically universal in human experience. They probably become severe enough to be of significance to the physician in about 75 per cent of adults and in a somewhat smaller percentage of children. My office records covering a period of over twenty-five years show that the three diagnoses I most frequently make are eyestrain, dental disorders and psychoneurosis. The three run a close race. Patients with psychoneuroses often have physical defects, too, which may require treatment. In diagnosis we have a dual question to answer. What kind of disease does the patient have, and what kind of patient does the disease have?

Every healthy person has emotional reactions, and often these show definite physical manifestations. The dejected expression, the tears, the convulsive sobs of grief are actual physical functional changes. So are the facies and palpitation of fright. Disgust may cause nausea and vomiting. Actual unconsciousness (fainting) may result from emotional causes. These physical states are real facts. Moreover, sensory disturbances of many kinds also arise from emotional causes. It might seem foolish to emphasize this were it not for the fact that all too often we hear doctors make some utterly asinine

In this paper, read before the North Carolina Regional Meeting of the American College of Physicians held at Chapel Hill, October 12, 1940, I have drawn freely from the chapter on "The Psychoneuroses" by T. A. Ross in volume VII of the *Oxford Loose-Leaf Medicine*, but have made alterations and added considerable material based on my own experience. Volume VII of the *Oxford Medicine* is also published separately as a bound volume by the Oxford University Press under the title "Psychiatry for Practitioners". I recommend it as the most generally useful work on the subject for the internist and general practitioner that I know.

statement, such as, "His headaches are imaginary." *Symptoms* are *never* imaginary. If I say I have a headache, I am either stating a fact or telling a lie; I am not imagining I have a headache. Imagination, however, may, and often does cause a misinterpretation of the meaning of symptoms. I may have a headache and imagine that it is due to a brain tumor, and worry over the imaginary tumor may make me a very sick man; but the *symptom*, the headache, is not imaginary.

In the normal person, symptoms due to emotional causes are transitory. Any of us may get temporary palpitation from fear, or a headache from anxiety, etc. We must now inquire why such symptoms persist or recur for days, weeks, months or even years in the psychoneurotic. There are three explanations for this:

1. Because they are dreaded. Fear is one of the most potent forces in life—far more potent than most of us like to acknowledge. The patient may dread an emotional reaction because it is very uncomfortable in itself or because of some supposed danger which he believes threatens him. All too often the physician may be a factor in causing this fear, in one of two ways. Let us take a purely neurotic palpitation as an example. The doctor may not understand this and may warn the patient that he must be careful not to overtax his heart. The patient, therefore, fears to exert himself. At times, however, he has to exert himself to some degree, and his fear of damage from the exertion liberates adrenalin, as fear always does. This causes more palpitation, which in turn convinces the patient that something is seriously wrong and creates greater fear. There may be no end to such a vicious circle. Ross cites such a case that persisted for twenty years, and then was cured by changing the patient's beliefs about the significance of his symptoms. On the other hand, the doctor may tell the patient that nothing is wrong—a statement which the patient knows to be untrue just as certainly as a child knows it is untrue if a doctor tells him it won't hurt when he gives him antitoxin. Such a statement to a neurotic either disgusts him or convinces him that his physician does not understand his case, or perhaps does not believe his statements about palpitation. This causes despair, and the fear that noth-

ing can be done for him, and *this* fear makes the trouble persist. He should be told the *truth* that there is nothing organically wrong with his heart, but not the *falsehood* that there is nothing wrong with his nervous system and the resultant functioning of his heart.

2. Symptoms due to emotion may persist in the neurotic because of a *conditioned reflex*. When a puppy has once tasted meat, his saliva flows at the smell or sight of meat—a *simple* reflex. If, however, every time the puppy is given meat a bell is rung, after many such experiences the simple ringing of a bell makes the saliva flow in the absence of meat—a *conditioned* reflex. We may even condition a conditioned reflex. For example, if, in the case just cited, we flash a light in the puppy's eyes every time the bell is rung, eventually we may discard the bell and make the saliva flow by means of the flashlight alone. Such conditioned reflexes often explain apparently irrational human actions. Professor Bernard Hart was walking with a friend one day when certain chimes, famed throughout England for their beauty, began to play, causing great irritation in his friend. Soon Dr. Hart unearthed this perfectly logical explanation of his friend's otherwise amazing reaction. He had published some verse of little merit which a reviewer had condemned mercilessly, contrasting it with some excellent verse by a clergyman. This caused a reaction against clergymen in general, and, indeed, against the church and all its works. Anything which even subconsciously reminded him of the humiliating review of his verse enraged him.

3. Symptoms may persist because there is some advantage in being ill. We must emphasize at once that the true psychoneurotic is not conscious of such an advantage. It is to his subconscious mind that it makes its appeal. Indeed, as we shall see later, bringing the matter into clear consciousness is the most valuable means at our command to cure the patient. Subconscious activity is seen most obviously when we see someone walking in his sleep. Some part of his mind below the conscious level takes charge and controls his actions. Somnambulism, however, is an exceptional form of subconscious activity. Our daily habits display the ordinary form. I may start to see a patient beyond the hospital, but when I reach that institution I may turn in through force of

habit, before I realize consciously what I am doing.

We must distinguish very sharply between malingering, a rather rare condition, and psychoneurotic manifestations, which are exceedingly common. Even in damage suits, where malingering is notorious, it is far less common than the subconscious desire for advantage. In the war, as pointed out by Ross, there was much malingering, but many escape mechanisms were not malingering. Some men for months at a time kept up a violent coarse tremor of their arms. As a conscious act of malingering, this would be impossible; fatigue would make them stop to rest. Yet, once they were discharged from the army, the tremor stopped very soon, because the emotional strain was removed.

Ross points out that in civil life, apart from compensation cases (and I would add childish pranks), malingering usually is evidence that a patient feels himself to be in a very tight place. A certain patient's room was on the ground floor. His physician saw him through a window sitting in his chair reading a paper; however, when he was admitted to the patient's room he found the man in bed writhing in pain. The patient said he had been that way for half an hour—a statement which was obviously a lie. He had been very thoroughly examined by modern methods, and no organic trouble was found. However, three weeks later he was dead from cancer of the pancreas. He had exaggerated his suffering in a vain effort to make his doctor understand his condition.

Let us return, however, to the psychoneurotic. Some serious difficulty may exist in a home or a business. The psychoneurotic breaks down under it and suffers real and often very distressing symptoms. He is sent to a hospital, and always improves; but on returning home he gets worse again if the difficulty remains. This is an escape mechanism. In the hospital he does not have to face the difficulty. He does not enjoy being sick—no one does who suffers what the psychoneurotic goes through—but he finds those symptoms less intolerable than the difficulty at home or in business. This process, however, is not a conscious one.

Many emotional reactions were useful in the past and will be again if civilization breaks down. Let us take our old symptom of palpitation. Until recently, what did man

fear? Unemployment? A break in the stock market? No. He feared physical attack from other men or animals, necessitating adrenalin to cause palpitation and deliver blood, oxygen, and sugar to the muscles in excess, so that he could fight or run long and hard. But under civilized conditions, there is no one to fight and no place to run, so the adrenalin simply causes palpitation, as racing the motor of an automobile while the car is standing still merely shakes the car and does harm rather than good. Insomnia, too—that horror of the psychoneurotic—was once invaluable. If a man was in danger of physical attack, he had *better* stay awake on guard if he wished to live. But now, staying awake just wears him out—more from the worry it causes than from loss of sleep. What is the difference between the insomniac psychoneurotic who requires a couple of hours to get to sleep and von Humboldt, who at the age of 80 complained that he no longer had any time to work, as he required four hours of sleep? There are some physical differences, no doubt, but one of the most important differences is that von Humboldt was interested in everything under the sun except Humboldt, whereas the psychoneurotic has narrowed his interest down to himself.

What about overwork as a cause of the psychoneuroses? It is very often unjustly blamed for them. The student breaks down on the eve of examinations, but it is from worry, rather than work. Some students collapse nervously after examinations, but almost never those who pass. Business men "crack up" from worry, rather than from work. Sometimes the worry has nothing to do with business. A man claimed he broke down from overwork, but soon afterwards ran off with another man's wife. The emotional conflicts involved were responsible, not overwork. A country practitioner and philosopher, Dr. William N. MacCartney, in his fascinating book *OBSERVATIONS OF A GENERAL PRACTITIONER*, remarks that there are two reasons for almost everything we do—a good reason and the real reason. The good reason (but alas, untrue) for the breakdown of the man just cited was overwork. The real reason was getting involved with another man's wife.

There seems no limit to the variety of symptoms, mental and physical, which may afflict the psychoneurotic. Certain manifes-

tations, however, require special analysis. We have already discussed insomnia. The activation of certain childhood fears is frequent. Most of us have our "pet aversions", many of which are based on childhood experiences. A child reared in a family which, at the approach of a thunderstorm, pulls down all window shades and sits on the stairs with ears stopped up, is very likely to grow up with a phobia for thunderstorms. If, in addition to this, he has a narrow escape from lightning, the phobia will probably be a severe trial to him throughout life. Please note that a phobia is not a reasonable fear, such as fear of being run over if you don't look before crossing a street, or fear of being struck by lightning if you seek refuge under an isolated tree, but is based entirely on an emotional reaction that is not amenable to reason. The fear is out of all proportion to the danger. The common unreasoning fear of perfectly harmless snakes often is due to childhood training, and may, in some cases, be due to a subconscious association of snakes with powers of evil, based on the Garden of Eden story.

Many fears are not phobias, but rational fears based on the psychoneurotic's misunderstanding of the nature of his own case. The fear of insanity is very prevalent and devastating in certain psychoneuroses. Worry prevents concentration and the fixing of things in the memory; hence memory often fails at most inopportune moments. Such a failure of memory may make one think he is going mad. Explanation will cast out such fears.

One reason (there are many others) why sex plays such a part in psychoneuroses is because many children are taught that all sexual ideas are wrong. This is due to unintelligent or misguided ideas of education. Sex is one of life's most potent forces. Sexual ideas are bound to occur with force and frequency. The child should be trained to regard these as natural and normal, and taught how to control them properly and divert his thoughts actively into channels of constructive activity. If, however, he has been taught that the most fleeting sexual thought is essentially and grossly sinful, he will be tortured with continual emotional conflicts that will prepare the way for a nervous breakdown.

Nervous indigestion due to emotional causes is exceedingly frequent. Every doctor who has not read Alvarez's great little

classic⁽¹⁾ on that subject should do so. I wish to quote from it a profound truth that is too little appreciated by many physicians: "It is a curious fact . . . that patients with large cancers gnawing at their vitals are slow to complain. Many go about their business until they are too weak to get out of bed, and many seek relief only when forced to do so by their relatives. When the physician tells such a person, as he so often has to do, that it is too late for operative removal of the growth, and that there is little that can be done, the answer is generally a brave one. I have never heard such patients complain or rail against fate. Often they say: 'It is no matter; I have lived my life, my children are grown, and I am ready to go.'

"It is always somewhat of a shock and an annoyance to turn, sobered, from such an interview to the consideration of the endless complaints of someone who can show no sign of organic disease, who perhaps has every comfort in life, and who yet complains that his cross is greater than he can bear, and perhaps there is some extenuation for the physician who loses patience and scolds. *The truth of the matter probably is that nervous patients commonly do suffer more intensely and more continuously than do persons with organic disease. There is no question that the symptoms that accompany a nervous breakdown are real, and there is every reason to believe that a greatly increased irritability of the nervous system should cause much suffering.*" [Italics mine].

One of the most important symptoms in the psychoneuroses that must be understood and explained to the patient is the feeling of exhaustion, which may be very disabling, even though true exhaustion is not present. It is ridiculous to suppose that taking a few steps across the floor could cause weeks of physical exhaustion, yet some psychoneurotics believe just that. Overemphasis on the "rest cure" is in some measure responsible for this. What do we mean when we speak of "nervous exhaustion"? Let us consider the meaning of the term "exhaustion". We can picture a mill dam that is completely drained so that the water power is totally exhausted, or a battery that is entirely run down so that the electromotive force is exhausted, or a bank account without funds so that there is financial exhaustion. But

1. Alvarez, Walter C.: *Nervous Indigestion*, New York, Paul B. Hoeber, Inc., 1930, p. 115.

we can also picture a dam full of water that has the sluice gate stuck so that we cannot release the stored-up power, a battery fully charged with a broken connection, a bank account containing money but no check-book at hand. *Until we can raise the sluice, get an electric connection, or procure a check, we shall be as totally devoid of these forms of power—water, electric or financial—as if the power were truly exhausted.* So in the “exhaustion” of the psychoneuroses. Fear is usually the factor that incapacitates us from releasing power that is there, and we are as devoid of strength as if it were not there. Let us examine a normal phenomenon that may also throw light on this problem. An army is marching along a road on a hot day. The men are dropping out from so-called exhaustion. Every officer knows that the best way to stop this is to have a band strike up some lively music. The band does not and cannot create energy in the tired men. It releases energy that is already there but that is locked up, as it were, by the monotony of marching. The emotional response to the monotony is a feeling of exhaustion, but once the monotony is relieved by the music, the “exhaustion” disappears. Kipling has expressed this monotony of marching better than anyone else in his amazing study of a psychoneurotic state in his poem “Boots” (from SOUTH AFRICAN SERVICE SONGS). Here it is:

BOOTS

We're foot—slog—slog—slog—sloggin' over Africa!
Foot—foot—foot—foot—sloggin, over Africa—
(Boots—boots—boots—boots—movin' up and down again!)

There's no discharge in the war!
(Eccles. viii: 8)

Seven—six—eleven—five—nine—an'-twenty miles to-day—

Four—eleven—seventeen—thirty-two the day before—

(Boots—boots—boots—boots—movin' up and down again!)

There's no discharge in the war!

Don't—don't—don't—don't—look at what's in front of you

(Boots—boots—boots—boots—movin' up an' down again!)

Men—men—men—men—men go mad with watchin' 'em,

An' there's no discharge in the war!

Try—try—try—try—to think of something different—

Oh—my—Gawd—keep—me from goin' lunatic!

(Boots—boots—boots—boots—movin' up an' down again!)

There's no discharge in the war!

Count—count—count—count—the bullets in the bandoliers:

If—your—eyes—drop—they will get atop 'o you
(Boots—boots—boots—boots—movin' up and down again!)

There's no discharge in the war!

We—can—stick—out—'unger, thirst an' weariness,
But—not—not—not—not the chronic sight of 'em—
Boots—boots—boots—boots—movin' up an' down again,

An' there's no discharge in the war!

'Taint—so—bad—by—day because o' company,
But—night—brings—long—strings—o' forty thousand million

Boots—boots—boots—boots—movin' up an' down again,

There's no discharge in the war!

I—'ave—marched—six—weeks in 'ell an' certify

It—is—not—fire—devils—dark or anything

But—boots—boots—boots—boots—movin' up an' down again,

An' there's no discharge in the war.

War has taught us that total exhaustion is rather unusual. Consider the retreat from Mons. The British army marched and fought with almost no sleep for a week. Then it slept thirty-six hours while it was covered by another friendly army. Then it plunged into the battle of the Marne and went right on through into the battle of the Aisne. Note these two points: recovery from fatigue was rapid (in 36 hours), unlike the fatigue of nervous exhaustion; and the exhaustion did not become imperatively operative until the army was safe. Had it not been safe, it would have struggled on as did Napoleon's army in the retreat from Moscow. Many fell out, but the majority showed that total exhaustion is largely a psychological affair; it does not arise as long as there are urgent reasons why it should not.

Nervous exhaustion is often an escape mechanism—subconscious, of course. Unpleasant duties and situations may be escaped by such tricks played on us by our subconscious selves.

Finally, a few words on the treatment of psychoneurotics. It is foolish to dismiss them with the advice to exercise their wills, pull themselves together, brace up, keep the chin up, etc. All psychoneurotics are told that, but without benefit. The will is much like an automobile starter. It is very necessary and has to be used frequently. At the moment I wish to read a rather seductive detective story. Duty dictates, however, that I write this paper. I make one effort of will to do this, just as one steps on the starter of a car to get going. If, however, I found myself stopping in the middle of every sentence to gaze wishfully at the de-

tective story, this paper would be even worse than it is; I could do no work of any consequence whatever. I could do some work by constantly pulling myself together and driving myself, but it would be work of inferior quality. So one can throw a car in gear and step on the starter and drive it a few yards; but, except in some emergency, it is bad practice and wears out the machinery. If, after I make an effort of will to sit down and go to work, the work does not go on of itself, something is wrong and needs attention. So don't tell the psychoneurotic to keep pulling himself together until he wears himself out, but try to find out and correct what is wrong.

To do this takes a great deal of time. Ross says that the longest history he ever took required forty hours. Alvarez once found ten days of insistent questioning necessary before he could elicit the truth that had to be brought out before the patient could be cured. Such cases are relatively rare, but it is not unusual to have to take from two to four hours in examining a psychoneurotic. Whether this is done at one or more sittings is optional, depending on the amount of time available and the endurance of physician and patient; but certainly the first sitting in the average case should not take less than an hour, and when the time is available, I prefer to take from one and a half to two hours, if the patient is not too fatigued thereby. If the patient wants to talk, let him talk himself out. Much irrelevant material may be dismissed, but hints will be obtained that will serve as leads to the solution of the problem. Then start a systematic history and physical examination. Thoroughness here gives the patient a sense of trust in his doctor. After this is completed and the necessary laboratory tests performed, the technique will vary. Usually I tell the patient that I know his symptoms are very real and very distressing, but that they are on an emotional basis, and I attempt to explain to him, much as I have tried to do in this paper, how emotional disturbances cause physical symptoms. Once he sees this he is ready to cooperate by telling his story. Often there is a situation the doctor is powerless to relieve. A billion dollars might have helped considerably to relieve the loss of homes, jobs, etc., during the depression, but the doctor cannot supply such relief. However, if he can show the patient how the situation

has produced his symptoms and get him to understand himself, often the most desperate situation is robbed of its psychoneurosis-producing power, and the patient is cured. Needless to say, all physical strains on the nervous system should be corrected, if possible, too. Eyestrain I find especially important. However, I tell the psychoneurotic that the understanding of his condition is the most important thing, and that new glasses can at best merely remove an additional source of strain, so that he will be in better shape to face his other difficulties.

What about placebos? I am unalterably opposed to them except in the case of a patient who is too ignorant to understand even the simplest explanations of the effect of emotional disturbances on the body. I know of one patient who was supposedly cured by having a practically normal cervix cauterized by a gynecologic enthusiast. Her real trouble was that the depression had forced her husband to work far away from home, and she was lonely and discouraged. However, the gynecologist had a good deal of self-assurance and gave her a "good reason", as she thought, for her trouble, rather than the real reason, and the treatment was really a superficial form of psychotherapy. It cured her of her symptoms for the time being, but fixed in her mind the idea that she had some organic trouble, and this caused a recurrence of her trouble. As a hospital intern I once ordered hypodermics of plain water hourly day and night, plus a bitter mess concocted by the Chief, to a young man with hysterical paralysis and anesthesia. It got him over his symptoms, except for a slight limp, in forty-eight hours, but unfortunately he had been "cured" that way many times before, and such "cures" fixed securely in his mind the idea that he had some disease requiring drastic drug treatment. This practically ensured recurrences of his attacks.

Thoroughness, kindness, sympathy, understanding, and, above all, patience with the psychoneurotic will help much. The psychoneuroses are fascinating, but they are no field for the man whose primary aim is money; for they require much time, and the pay is exceedingly small in an industrial town where so many cases are on an economic basis, being brought about by loss of employment, business losses, etc. We have been so dominated by the German school of pathological anatomists of the past generation that we have forgotten that this knowl-

edge of the power of the emotions over us is thousands of years old. We have become materialized and mechanized. Especially do Americans bow down to machinery. They gladly pay many times more for some simple surgical operation than for a most prolonged, painstaking, and often heart-rending study of some serious emotional situation, a study that leaves the physician exhausted by the burdens of his patient. There are compensations, however. To help where others have failed and to relieve the most distressing forms of suffering are no inconsiderable part of the reward for such work. It makes one feel in closer relationship to those wise men of old who knew the psychoneuroses far better than the greatest pathological anatomists, those men who gave us such priceless pearls of wisdom as these:

Better is a dinner of herbs where love is
Than a stalled ox and hatred therewith.

Better is a dry morsel and quietness therewith
Than an house full of feasting and strife.

Better is an handful with quietness
Than both hands full with much vexation of spirit.

It is better to dwell in the corner of the house-top
Than with a contentious woman in a wide house.

There is that maketh himself rich, yet hath nothing:
There is that maketh himself poor, yet hath great wealth.

The Treatment of Peptic Ulcer.—The following generalizations may be made about the treatment of peptic ulcer, based upon the experience of the Ulcer Follow-up Clinic of the Presbyterian Hospital:

Conservative medical therapy usually controls the symptoms of ulcer promptly and results in healing of the lesion. Medical management is disappointing as a measure to prevent recurrences of the disease in cases seen in the hospital, even if carried out over a long period of time. Surgical therapy should be considered if the risk of operation appears to be outweighed by the prospect of frequent and severe recurrences under continued conservative treatment or if symptoms persist after an adequate trial of medical treatment.

The chief indications for elective surgery are persistent pain under hospital treatment, oft recurrent gross hemorrhages, pyloric obstruction which fails to respond to medical treatment and suspected malignancy in cases of gastric ulcer. Posterior gastro-enterostomy yields excellent results in cases of duodenal ulcer with persistent pyloric obstruction, but is not indicated in other types of duodenal ulcer or in gastric ulcer. Subtotal gastrectomy results in a complete and apparently permanent freedom from symptoms in both gastric and duodenal ulcer in a high percentage of cases regardless of whether the indication for operation is persistent pain, recurrent hemorrhage, or obstruction.—Charles A. Flood: *Prognosis and Treatment in Peptic Ulcer*, J. Indiana State M. A. 34:7 (January) 1941.

PRIMARY PERITONITIS

CHARLES BUNCH, M.D., F.A.C.S.

CHARLOTTE

In the past all cases of peritonitis were considered to be primary, but as surgical knowledge has increased, cases of peritonitis associated with perforated appendix, perforated peptic ulcer, perforated diverticula, salpingitis, trauma and wounds of the abdomen, etc., have come to be classified as secondary peritonitis. Today, by primary peritonitis, we mean peritonitis of idiopathic, metastatic origin. Such cases are most often seen in children and have a high mortality rate. Following the introduction of serum therapy in some of these cases a few years ago, the mortality rate has been slightly lowered⁽¹⁾. It is still appalling. With the advent of chemotherapy⁽²⁾, the mortality rate can be further lowered.

Etiology

The organisms most often the cause of primary peritonitis are pneumococci and streptococci, usually the hemolytic type. Involvement by the tubercle bacillus and the gonococcus should not be classified as primary peritonitis.

Pathology

The mode of entry of the organisms is presumed to be by the blood stream, by the vagina and fallopian tubes in females, by the gastro-intestinal tract, or by the trans-diaphragmatic lymphatics.

There are many arguments against the blood stream's being the mode of entry of the organism. The organism can be isolated from the blood in almost all cases of lobar pneumonia, but pneumococcal peritonitis occurs in only 1/4 of 1 per cent of pneumonia cases (according to Ralleston⁽³⁾). Not all cases occur in girls; hence the genital route explanation cannot apply to all cases. Some of the cases in young females have shown no pelvic peritonitis and no visible infection of the tubes. Vaginal smears are most often negative for the offending organism^(1a).

- (a) Ladd, W. E.; Botsford, T. W.; and Craven, E. C.: Primary Peritonitis in Infants and Children, J.A.M.A. 113:1455-1459 (October 14) 1939.
(b) Dotan, F. J.: A Case of Pneumococcal Peritonitis With Recovery. Ohio State M. J. 35:609-610 (June) 1939.
- Sager, W. W.: A Case of Pneumococcal Peritonitis Treated with Prontylin. M. Ann. District of Columbia, 7:99-100 (March) 1938.
- Ingalls, C.: Specific Primary Peritonitis, J. Indiana M. A. 32:688-694 (December) 1939.

Trans-diaphragmatic spread is also controversial; it would explain an infection from the abdomen travelling upward in the direction of the lymph flow, and would better explain an empyema following pneumococcic peritonitis than the origin of the peritonitis from the respiratory tract. Ingalls⁽³⁾ very ably discusses this in his article.

It may be logical to say that the disease may occur by any one of the routes mentioned, or by more than one route; however, it is very likely that an altered permeability of the bowel wall may be a factor in the etiology⁽³⁾.

In a series of cases reported in the recent literature, out of 12 cases of pneumococcic peritonitis the blood culture was positive for the organism in 10 cases; in 18 cases of streptococcic peritonitis only 4 blood cultures were positive^(1a). Vaginal smears were less accurate, and throat cultures for the offending organism were almost universally negative^(1a).

Age and Sex

The disease is most common in the early years of life, according to a report of 67 cases at the Children's Hospital in Boston. Streptococcic peritonitis is seen most often in infancy, in the first four years of life, and pneumococcic peritonitis occurs usually in childhood between the ages of 2 and 7^(1a).

Practically all the series reported a higher incidence of primary peritonitis in girls than in boys. Some observers have called attention to the presence of nephrosis as the possible origin of pneumococcic peritonitis in boys^{(1a)(4)}.

Mortality

In the literature up to January, 1937, there were reported 308 cases of primary peritonitis (streptococcic), with a mortality rate of approximately 85 per cent⁽³⁾. Duncan reports 80 per cent mortality in streptococcic cases and 60 per cent in pneumococcic cases. Ingalls⁽³⁾ reports 100 per cent mortality in the former, and 50 per cent mortality in the latter condition. In Boston, Ladd^(1a) reports a series of 52 cases in which specific therapy was given, with a striking decrease in the mortality rate. Early operation and identification of the organism was employed. In the pneumococcic group serum therapy was used, with a resultant 12.5 per cent mor-

tality; in the streptococcic group sulfanilamide was given, with 28.5 per cent mortality^(1a).

Incidence

Hartzler⁽³⁾ in 1935 stated that he had seen only 160 cases in the literature, of which only 17 cases were authentic in America. Some observers have said that primary peritonitis constitutes 2 per cent of the acute abdominal emergencies in children, but that few more than 300 cases of primary peritonitis are reported in the literature⁽³⁾.

Symptoms

The onset is most often sudden and severe, with abdominal pain, usually generalized in character, and nausea and vomiting. Diarrhea may be observed and is sometimes profuse; and abdominal distention and tenderness are usually present. Leukocytosis is marked, and the temperature is considerably elevated. Delirium is sometimes present.

Diagnosis

Very seldom is the diagnosis of primary peritonitis made before operation. The condition is most often mistaken for perforated appendicitis with peritonitis. The differentiation is extremely difficult, if not impossible to make. Though appendicitis is infrequent in the early years of life it is sometimes seen. (We had a case within the last few years of perforated appendix and generalized peritonitis in a child approximately 1½ years of age.) It is safer to determine the cause of peritonitis at operation, if the child's condition justifies operation, than to speculate upon its being a primary peritonitis.

Operation

The appendix is most often found to be involved only along with the rest of the peritoneum. The appearance, consistency and odor of the pus will give valuable hints as to the causative organism. The pus should always be sent to the laboratory for smear, culture and typing. The abdomen may or may not be drained, depending on the amount, localization and consistency of the purulent material. It is best always to drain the incision.

Treatment

The usual treatment of peritonitis should be employed — Fowler's position; ample fluids, intravenously, subcutaneously or by

4. Pahmer, M.: Pneumococcic Peritonitis in Nephrotic and Non-Nephrotic Children, *J. Pediat.* 17:99-106 (July) 1940.

retention enemas; and transfusion if there is anemia present. The importance of the Jutte tube to relieve gastric distention cannot be over-emphasized. In peritonitis of pneumococcal origin, there is no single therapeutic measure more valuable than the intravenous administration of sodium sulfapyridine monohydrate. There is always the question as to how much sulfapyridine is absorbed in a vomiting patient when taken by mouth, and the question of how much time is being lost. When given intravenously it is immediately available. It could be better employed only if it were introduced into the peritoneal cavity during operation—and this possibly should be done⁽⁵⁾.

In streptococcal peritonitis, sulfanilamide should be given hypodermically.

Complications

The most frequent complication of primary peritonitis is empyema⁽³⁾⁽⁶⁾. Seventy-five per cent of the cases reported in one series had this complication⁽³⁾. Pneumonia is present in 25 per cent of the cases⁽³⁾. Pericarditis, erysipelas and intra-abdominal hemorrhage have all been reported, and there have been 2 cases reported with definite pelvic abscesses⁽³⁾.

Comment

The mortality rate of primary peritonitis can be greatly reduced by early operation, with identification of the offending organism, and prompt treatment of the peritonitis by the drugs previously mentioned given hypodermically or intravenously, as the case may be.

Recent Reports

Banks and Joseph⁽⁷⁾ reported a case of pneumococcal peritonitis proven by operation and culture which was treated with sulfapyridine given orally, with recovery. This was reported in the *British Medical Journal* of June 8, 1940. In September, 1940, Von Werssowetz and Andrews⁽⁸⁾ reported a case of pneumococcal peritonitis from their service at St. Luke's Hospital, London, Ontario, treated with sulfapyridine given by

mouth, with recovery. This case was reported in the *Canadian Medical Journal*. The cases that I shall report are, so far as I know, the first to be reported in the literature of this country of pneumococcal peritonitis treated with sulfapyridine.

Case Reports

Case 1. C. F. T., a white female, aged 7 years, was admitted to Mercy Hospital on February 25, 1940. She had been referred by Dr. T. N. Reid.

The child began complaining of abdominal pain in the afternoon preceding admission to the hospital. The pain first began in the umbilical region; it was at first mild in character, but gradually became more severe, associated with slight distention. There was no nausea, vomiting or diarrhea, and no symptoms referable to the genito-urinary tract. The family physician who was called found no particular areas of tenderness or rigidity present. The child did not, at that time, appear to be very ill. He remained with the child for several hours and examined her thoroughly, but no additional facts could be obtained. An enema was given with fair results. Following the administration of $\frac{1}{2}$ grain of codeine she rested well during the night. The next day the patient complained of more pain than before, and the abdomen was more distended. She had vomited a small amount once or twice. The temperature remained below 100 F. orally. There was some generalized tenderness over the abdomen, but no particular areas of tenderness; there was very little, if any rigidity. The patient did not vomit any more. In the course of the next few hours the distention became a little more marked and the patient appeared sicker. Hospitalization was advised, and the patient was admitted to Mercy Hospital.

There was nothing particularly interesting in the past history. The patient had had a normal childhood, with no serious illnesses. There was nothing of importance in the family history.

On physical examination the child appeared acutely ill, with an anxious expression on her face. There was no dehydration, and she appeared well nourished. The face was flushed; there was no rash on the skin; the eyes were bright. The chest was clear and resonant throughout; breath sounds were of normal quality. The abdomen was

5. Lockwood, J. S. and Ravdin, I. S.: The Prophylactic Use of Sulfanilamide in Abdominal Surgery, *Surgery*, 8: 43-55 (July) 1940.

6. Teasdale, J. M.: Pneumococcal Peritonitis with Bilateral Empyema, *Brit. M. J.*, 1:1179 (June 10) 1939.

7. Banks, A. F. and Joseph, G.: Pneumococcal Peritonitis Treated With Sulfapyridine and Sulfapyridine, *Brit. M. J.*, 1:931 (June 8) 1940.

8. Von Werssowetz, O. F. W., and Andrews, C. D.: Pneumococcal Peritonitis Treated by Sulfapyridine, *Canad. M.A.J.*, 43:268-269 (September) 1940.

slightly distended and there was tenderness and moderate rigidity present throughout, more marked across the lower abdomen, which appeared a little more distended on the right. Peristalsis seemed to be diminished; there was no bulging in the flanks; no tenderness was elicited over the kidney region; no masses were palpable; and no hernia was present. Rectal examination revealed tenderness high up on both sides; no blood was present. Genito-urinary examination was negative.

The leukocyte count was 44,000, with polymorphonuclear neutrophils 99 per cent, lymphocytes 1 per cent. Urinalysis was negative except for a 1 plus reaction for albumin, 75 pus cells per low power field, and occasional casts.

This case was thought to be an atypical case of appendicitis because of the very high blood count at onset. A diagnosis of perforated appendicitis with generalized peritonitis was made.

At operation free pus was encountered in the peritoneal cavity, with flakes and quantities of plastic exudate. The appendix did not appear to be the causative factor. A culture of the pus, and a smear for typing were sent to the laboratory. Appendectomy was performed and the abdomen was closed with drainage. Because of the appearance of the pus and absence of odor, it was believed that we were dealing with pneumococcal peritonitis. The laboratory soon reported that the organisms on the smear resembled pneumococci. Before leaving the operating room the child was given intravenously 2.5 Gm. sodium sulfapyridine monohydrate without reaction. Normal saline solution was given subcutaneously after the patient was put to bed. Fowler's position was employed. A sulfapyridine concentration test made the following morning showed 7.2 mg. per 100 cc. Sulfapyridine, $7\frac{1}{2}$ grains, was given twice daily by mouth. The laboratory reported that the culture of the organism showed pneumococci Type II.

The child continued to improve, and except for the occurrence of tonsillitis on the sixth day, she made an uneventful recovery. She was dismissed from the hospital on March 17, in excellent condition, with the incision well healed.

Case 2. On the same night another case

was admitted to Mercy Hospital by Dr. T. N. Reid, and was referred to Dr. J. P. Kennedy. I saw this patient with Dr. Kennedy and I am indebted to him for a report of this case. Both children lived in the same locality. This child, M. R. G., aged 9, complained of pain in the lower abdomen. The onset of the illness was twenty-four hours before admission, with cramp-like pains in the abdomen. At first the pains were generalized and mild in character, but they became localized in the right side and were associated with some vomiting. There were no genito-urinary symptoms or diarrhea.

There was no history of similar attacks. The family history is of no importance.

Examination revealed a young girl appearing acutely ill, with a temperature of 103 F. The tongue was dry and coated; the skin showed no rash. The chest was clear and resonant throughout. The abdomen was distended, with tenderness and some rigidity over its entirety. Rigidity was more marked on the right side. Rectal examination revealed tenderness high up on both sides; no mass could be detected.

Examination of the urine was negative, except for an occasional pus cell in a catheterized specimen.

The leukocyte count was 27,800, with 92 per cent polymorphonuclear neutrophils.

A preoperative diagnosis of acute appendicitis was made.

At operation the appendix was found to be swollen and inflamed, containing seropus and two large threadworms. The ileum was injected and there were some enlarged mesenteric glands present. There was a slight exudate over the small bowel, and the operative area felt slick to the touch. A culture was made of this exudate. The appendix was removed; the abdomen was not drained.

Sulfapyridine, grains 10, was given by retention enema every four hours for the first twenty-four hours; then sulfapyridine, grains $7\frac{1}{2}$, for three days. The elevation of temperature gradually subsided. The report of the abdominal culture was positive for pneumococci but negative for Types I through XXXII.

The child made an uneventful recovery and was dismissed on March 5, 1940. The wound was well healed and the patient was dismissed in excellent condition.

PRENATAL SYPHILIS

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and

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The adequate ante partum treatment of syphilitic women has greatly decreased prenatal syphilis, but the inadequate treatment of such patients has made the disease much more difficult to diagnose by suppressing the manifestations of syphilis in the newborn and decreasing the stigmata of prenatal syphilis.

In making a diagnosis of prenatal syphilis the following facts regarding the mother must be taken into consideration:

1. Mothers with early syphilis, in the majority of cases, will have positive serology. In addition clinical evidence may be found.

2. Mothers infected with syphilis for a number of years may present some difficulty in diagnosis unless tertiary lesions are present. The percentage of positive serological tests is not as great as in younger mothers. It must be kept in mind that, no matter how long standing the disease may be, the patient is still capable of infecting her unborn child irrespective of the Wassermann reaction.

3. A negative Wassermann test in the mother by no means excludes syphilis; the presence or absence of syphilis must be judged by the circumstances in each case.

4. Patients may give a history of previous anti-syphilitic treatment. So-called adequate treatment is by no means an assurance against the mother's infecting the child. The possibilities, however, are remote.

Methods of Diagnosis of Prenatal Syphilis

1. *Blood serology:* A child born of a syphilitic mother may have strongly positive serology at birth. However, a positive Wassermann or Kahn test is by no means conclusive evidence that the child has syphilis. It is a phenomenon that occurs in the newborn children of syphilitic mothers that has not been adequately explained. It is presumed that the reagin crosses the placental

barrier from the maternal to the fetal blood. For this reason no child should be treated for syphilis during the first six to eight weeks unless stigmata exist. Blood Wassermann tests should be repeated weekly for six to eight weeks. If the child is non-syphilitic the blood will become negative, or the titer will decrease during this period. However, if the child has syphilis the titer will increase in successive weeks or remain strongly positive from the beginning.

2. *Cord blood Wassermann:* This is a very inadequate method and should never be relied upon in any circumstances. A diagnosis of infantile syphilis should never be made from the results of a single test. Repeated examinations of the mother's blood before delivery and of the child's for several weeks after delivery is more reliable.

3. *Darkfield Examination:*

- a. A cord stump which heals slowly and any suspicious lesion of the skin of an infant should have a darkfield examination. Such lesions usually occur from three to eight weeks after delivery.
- b. Material from the umbilical vein should be examined after the birth in suspicious cases. Take scrapings near the fetal end of the cord for darkfield examination.

Clinical Picture of Infantile Syphilis

One should always keep in mind that for every case of syphilis diagnosed clinically there are at least five discovered by routine serologic tests. A child with prenatal syphilis may show one of three things:

1. Early stigmata of syphilis which correspond to the secondary stage in acquired syphilis.

2. Late stigmata of syphilis corresponding to the tertiary stage.

3. No stigmata, but strongly positive serologic tests. By far the greatest majority fall in this group.

Early Stigmata of Congenital Syphilis

The early stigmata correspond to the secondary stage in acquired syphilis; all of these are seen under the age of 5 years, and most of them in the first few months of life.

1. Snuffles (syphilitic rhinitis).
2. Skin manifestations:

a. The most frequent lesions are maculopapular, involving part or all of

the body, practically always the soles and palms.

b. Bullous lesions are occasionally seen.

3. Condylomata, involving the regions that are moist and where the skin is thinnest (anal and genital regions).

4. Fissures about the mouth and lips. Later these leave scars and are called rhagades.

5. Mucous patches (more frequent in the nose and throat).

6. Persistent jaundice in the newborn.

7. Bleeding (abnormal bleeding not associated with a blood dyscrasia).

8. Enlarged liver and spleen.

9. Meningitis. If it is untreated a moderate hydrocephalus follows.

10. Bone changes as demonstrated by x-rays:

a. Osteochondritis (5 wk.).

b. Osteopsathyrosis.

c. Epiphysitis

d. Periostitis (5 mo.) $\left\{ \begin{array}{l} \text{pseudoparalysis} \\ \text{and pain on motion.} \end{array} \right.$

e. Dactylitis (under 6 mo.).

11. Miscellaneous:

a. Weight loss.

b. Absent eyebrows.

c. Hepatitis.

d. Testicular, epitrochlear and general glandular enlargement.

e. Pneumonia alba (seen in stillborn infants).

Late Stigmata of Prenatal Syphilis

The late stigmata correspond to the tertiary stage in acquired syphilis; all of these are seen after the age of five years.

1. Interstitial Keratitis.

Other eye manifestations are chorioretinitis, choroiditis, iridocyclitis, Argyll Robertson pupils, ptosis, diplopia and dimness of vision.

2. Clutton's joints—a symmetrical, usually painless intermittent hydro-arthritis of the knee joint (other joints are less commonly involved).

3. Chronic periostitis (saber shins).

4. Alopecia.

5. Subcutaneous gummata with ulceration—usually of the face and shins.

6. Gummata of the bone, which may break down and leave draining sinuses.

7. Hutchinson's teeth (peg and notched permanent upper central incisors). A "mulberry" or "moon" molar is frequently seen

in association with the typical Hutchinson's teeth, or it may be the only manifestation noted.

8. Saddle nose.

9. Perforated nasal septum.

10. Rhagades.

11. Nerve deafness, bilateral.

12. Juvenile paresis.

13. Tabes.

14. Paroxysmal hemoglobinuria.

15. Miscellaneous:

a. Hoarseness, stridor.

b. Facial asymmetry.

c. Mental and physical retardation.

d. Genital hypoplasia.

e. Higoumenaki's sign (thickening of the sternal end of the clavicle).

f. Hepatitis.

Numbers 1, 7 and 11 make up Hutchinson's triad, which is not commonly seen.

Aortitis and other involvement of the cardiovascular system is rare in prenatal syphilis.

Treatment of Prenatal Syphilis

After the diagnosis has been definitely established, treatment should be instituted immediately. The percentage of cures with the plan suggested below is as high as that obtained with methods followed in other clinics, and the cooperation of the parents is greater when less intravenous therapy is given in the younger age group.

Treatment of children under five years of age:

Drugs of choice:

1. Arsenical drug:

a. Acetarzone (Stovarsol). This drug is a pentavalent arsenical. Its chief advantage is that it can be given by mouth. In spite of the criticism given this drug, the evidence justifies its use in children under 5 years of age.

b. Neoarsphenamine — intravenously. In infants the superficial veins of the scalp or the jugular vein are usually accessible for intravenous treatment.

c. Sulfarsphenamine. This drug has the advantage that it can be given intramuscularly, but it should be used with great care since it is far more toxic than the other arsphenamines.

2. Heavy metals:

- a. Bismuth salicylate is the drug of choice. The drug is easily administered and rarely causes serious reactions.

Methods of administration:

The patient should be started on bismuth salicylate for the first six weeks, then treated as outlined below.

All children should have a spinal fluid examination at the completion of treatment. It should be done earlier if indicated.

It must be remembered that although children tolerate treatment better than do adults, they are subject to the same reactions.

Suggested Outline of Treatment

Children under 5 years.

Treatment should consist in alternating courses of bismuth salicylate and acetarsone (Stovarsol)⁽¹⁾, as outlined below. The bismuth—a 10 per cent solution in oil—should be given intramuscularly once a week in the following dosage:

Under 2 years—0.25 cc. (0.025 Gm.)—0.5 cc. (0.05 Gm.)

Two to 5 years—0.5 cc. (0.05 Gm.)—1.0 cc. (0.1 Gm.)

The dosage of acetarsone is as follows:

First and second weeks of each course 5 mg. per kilogram of body weight daily.

Third and fourth weeks, 10 mg. per kilogram daily.

Fifth and sixth weeks, 15 mg. per kilogram daily.

Seventh through the ninth week 20 mg. per kilogram daily.

Period of Treatment	Drug	Tests
1st-6th weeks	Bismuth salicylate	Wassermann test and urinalysis
7th-15th weeks	Acetarsone	
16th-21st weeks	Bismuth salicylate	Wassermann test and urinalysis
22nd-30th weeks	Acetarsone	
31st-36th weeks	Bismuth salicylate	Wassermann test and urinalysis
37th-45th weeks	Acetarsone	
46th-51st weeks	Bismuth salicylate	Wassermann test and urinalysis
52nd-60th weeks	Acetarsone	
61st-66th weeks	Bismuth salicylate	Wassermann test and spinal fluid examination.
67th-75th weeks	Acetarsone	
76th-80th weeks	Bismuth salicylate	

After eighty weeks of treatment, if the Wassermann reaction is negative, the patient

should return every three months for a check-up the next year and once annually thereafter up to puberty.

Children over 5 years.

Alternating courses of bismuth salicylate (1 cc. of a 10 per cent solution in oil given intramuscularly) and neoarsphenamine (10-15 mg. per kilogram of body weight given intravenously) should be given, as outlined below. The dose of neoarsphenamine should not exceed 0.3 Gm.

Period of treatment	Drug	Tests
1st-6th weeks	Bismuth salicylate	Wassermann test and urinalysis
7th-12th weeks	Neoarsphenamine	
13th-18th weeks	Bismuth salicylate	Wassermann test and urinalysis
19th-21th weeks	Neoarsphenamine	
25th-30th weeks	Bismuth salicylate	Wassermann test and urinalysis
31st-36th weeks	Neoarsphenamine	
37th-42nd weeks	Bismuth salicylate	Wassermann test and urinalysis
43rd-48th weeks	Neoarsphenamine	
49th-54th weeks	Bismuth salicylate	Wassermann test and urinalysis
55th-60th weeks	Neoarsphenamine	
61st-66th weeks	Bismuth salicylate	Wassermann test and urinalysis and spinal fluid examination.
67th-72nd weeks	Neoarsphenamine	
73rd-80th weeks	Bismuth salicylate	

After eighty weeks of treatment, if the Wassermann reaction is negative the patient should return every three months for a check-up the next year, and then once annually for five years.

Irregular Treatment of Syphilis.—In a study of patients in the latent period, that between the primary infection and the development of symptoms of the late manifestation of the disease, Moore found that cerebrospinal fluid abnormalities were three times as frequent in patients who had received irregular treatment as in those whose treatment had been continuous, and that serious abnormalities were ten times as frequent in the irregularly treated group as in the group that had received good treatment.—H. Houston Merritt, M.D.: *The Early Clinical and Laboratory Manifestations of Syphilis of the Central Nervous System*, New England J. Med. 223:446 (September 19) 1940.

The Cause of Syphilitic Meningitis. — It was argued for some time that the appearance of syphilitic meningitis was due to treatment with arsenic, the theory being that the arsenic had driven the spirochetes into the nervous system and caused the meningitis. This hypothesis is, of course, without foundation, and probably arose from the fact that the introduction of arsenic in the treatment of syphilis was coincidental with the development of the technic of removing and examining the cerebrospinal fluid. In the vast majority of cases the meningitis develops in patients who have received no previous treatment or an amount that was entirely inadequate.—H. Houston Merritt, M.D.: *The Early Clinical and Laboratory Manifestations of Syphilis of the Central Nervous System*, New England J. Med. 223:447 (September 19) 1940.

1. Acetarsone reactions (rare): (1) diarrhea, (2) rashes, (3) fever, (4) pyelitis, (5) nephritis, (6) Herxheimer reaction. If a reaction appears, discontinue the drug for a period of one or two weeks, and then either continue the drug with a minimal dose or start on a bismuth course if that course is about due.

HISTORY OF UROLOGY IN NORTH CAROLINA

JOHN S. RHODES, M. D.

RALEIGH

In 1799 a medical society was organized in Raleigh, with the appointment of a Board of Censors, germ of the present Board of Medical Examiners established in 1859. This first North Carolina Medical Society was dissolved in 1804. For forty-five years no formal organization of the medical profession existed in the state. The present State Medical Society was founded in April, 1849, when twenty-nine doctors from eight counties gathered in the assembly room of the Supreme Court at Raleigh. Dr. Edmund Strudwick of Hillsboro became the first president. This Society has met annually since its organization, except for the years 1861-1867. Aimed at improvement in ethics, advancement of professional standards and promotion of the public health, this organization confronted many obstacles. In fact, in 1869, a bill was introduced into the Legislature designed to bring about its dissolution.

The *Transactions* of the Medical Society of the State of North Carolina preserve for us records of the medical practices of those early days. Much attention was devoted to the fevers: typhoid, malaria, epidemic dysentery, cholera infantum, and bilious remittent fever. Bad air was credited with a causal relationship to most diseases. Much of the early literature came from the pens of men who were not alone practitioners of medicine, but whose versatility included a knowledge of chemistry, farming, nursing and the virtues of medicinal plants. May we quote from Dr. John Wesley Long's "Early History of the North Carolina Medical Society": "To say of these pioneers that many of their theories and practices have been proven to be erroneous is only to anticipate what posterity shall say of us. They lived up to their best lights, the most advanced science of their day. If we are in any sense better than our fathers were, it is only because 'a live dog is better than a dead lion.'"

One is impressed by the scant reference to examination of the urine in the early days.

No mention was made of gonorrhea until 1878, the year before Neisser described the causal organism. Dr. William B. Norcom of Edenton discussed Otis' method of management of urethral strictures and observed that "Gleet is always accompanied by stricture. Cure the stricture and you will cure the gleet."

Long before the birth of urology as a specialty in North Carolina, physicians were confronted with the problems of the urologist and managed them with unhesitating skill and success. In a sketch of diseases encountered in Wilmington from 1841-1850 the only reference made to disturbances of the urinary tract was mention of four cases of nephritic colic followed by the expulsion of calculous concretions. In 1855 Dr. N. J. Pittman of Rocky Mount in a review of surgical cases seen within the year included the following: 1. A vesico-vaginal fistula in a 17 year old servant girl, repaired with partial success by the method of M. Jobert de Lambelle. 2. Phimosis in a slave boy 2½ years of age. 3. A negro boy, aged 12, with chills and fever, generalized dropsy, loss of appetite, and diarrhea. A bladder stone weighing 2 ounces, detected by the passage of a sound, was removed by lateral lithotomy. The patient was able to "leave his bed on the fiftieth day and thenceforth continued in good health." 4. Multiple perineal fistulae connecting with the urethra in a 34 year old man, relieved by wide incision and the insertion of an inlying catheter without the benefit of anesthesia. 5. An operation for hydrocele pending, the plan being to inject the tunica vaginalis with port wine diluted to one-third.

The chemical analysis of a stone removed from the bladder was described by Dr. J. F. Shaffner, of Salem, in 1868: "Chemically considered it is of the uric variety. Water has no effect upon it while liquor potassae dissolves it. By addition of nitric acid and the application of heat it disappears with effervescence. Before a glow-pipe it becomes black and is gradually consumed, leaving as a residue a minute quantity of white ashes."

There is not one among us who does not frequently see dramatic relief of bladder dysfunction in the female following urethral dilatation. In 1872, Dr. Henry T. Bahnson, of Salem, reported the accidental discovery of the efficacy of this type of therapy. He was consulted by a 65 year old woman who

complained of excruciating agony in the bladder region. There was an intermittent stream, hesitancy and strangury, due presumably to a stone in the bladder. Under ether anesthesia, the urethra was forcibly dilated to admit the index finger. Bimanual palpation failed to demonstrate a stone. "Much to our surprise the lady recovered entirely and has to this day suffered not the slightest inconvenience or difficulty in micturition." This encouraged Dr. Bahnson to report 2 additional cases thus heroically treated with the same satisfactory results.

The creation and use of the lithotrite in the management of vesical calculus led Dr. Marcellus Whitehead of Salisbury, retiring as president of the North Carolina Medical Society in 1873, to make the following comment: "The operation of lithotrity has now been perfected and no surgeon would propose the operation with the knife when the lithotrite could effect his purpose. And this operation alone affords one of the notable triumphs of the surgeon's art."

Realistic description of symptoms due to bladder stone was offered by Dr. W. R. Sharpe, of Davie County, in 1874, in his discussion of the case of a 9 year old emaciated negro boy with distress of urination beginning at the age of 7 months. "The left hand and arm were more dwarfish than the other owing to the fact that the right was used for gripping and pulling at the penis to relieve the distressing itching and tormenting feeling of the urethra, which followed the more acute and agonizing suffering during and immediately after passing the urine."

Many of the activities of these physicians and surgeons living during the nineteenth century have been recorded in the writings of Dr. Hubert Ashley Royster, eminent pioneer in the field of general surgery in North Carolina. In a paper read before the Wake County Medical Society in 1910, Dr. Royster said of Dr. Abram V. Budd: "His operations for vesical calculus, a very prevalent affection in Chatham County at that time, were the admiration of the profession of the state." Dr. Budd was born in 1830. He is credited with having performed in 1885 the first suprapubic cystotomy for stone in North Carolina. Dr. Royster cited a memorandum on a receipt to Dr. Budd for a subscription to the *North Carolina Medical Journal* in the writing of Dr. Thomas F. Wood, editor of the *Journal*, dated March 9, 1885:

"Hope you are going to the Durham meeting. I have those surgical volumes. I will bring them to you if you will promise to bring me an account of your high operation for stone. No manuscript, no trade. Answer."

In the year 1824 Dr. Caleb Winslow was born in Perquimans County. A fractured clavicle in early life turned his attention from teaching to medicine, and he graduated from the University of Pennsylvania in 1849. For many years he practiced in the town of Hertford in his native county, acquiring wide renown as a physician and surgeon. His particular claim to fame was as a lithotomist, and he recorded 99 consecutive lithotomies with only one death. The patient who would have become the hundredth case was referred to his son, the late Dr. Randolph Winslow, then head of the department of surgery at the University of Maryland.

Dr. Caleb Winslow became examiner in surgery on the first North Carolina Board of Medical Examiners elected in 1859. Dr. John Wesley Long, addressing the annual meeting of the North Carolina Medical Society in April, 1917, quoted from a biographical sketch appearing in the *North Carolina Medical Journal* for August 1892: ". . . Dr. Winslow was widely known as a skilful surgeon. His record of 99 lithotomies with one death was for a long time the best in the world . . ." The devastation resulting from the Civil War led Dr. Winslow to move to Baltimore, where he devoted his talents to general practice and obstetrics with great success. His death occurred in June, 1895.

During these early days stone, particularly bladder stone, was evidently often encountered. We are indebted to Dr. Hubert A. Royster for his paper on the life of Edmund Strudwick read before the North Carolina Medical Society in 1907 and published in April, 1936, in the *Southern Surgeon*. Dr. Strudwick, born in 1802 and first president of the North Carolina Medical Society, was designated as the leading lithotomist of his time. He lived in Hillsboro, Orange County, until his death in 1879, having graduated from the University of Pennsylvania in 1824. His reputation became widespread and he was much in demand in all sections of the state. Dr. Strudwick practiced the lateral lithotomy, the method in vogue prior to Dr. Budd's introduction of the "high operation"

in 1885. It was the custom to use no drain except in the case of hemorrhage. Dr. Strudwick is reported to have performed 28 consecutive lithotomies without a death, in one case having to resort to a blacksmith's tongs to crush a stone too large to be removed through the incision.

Dr. Hubert Ashley Royster, of Raleigh, whose father was an eminent physician, began practice in July, 1895, following his graduation from the University of Pennsylvania in 1894. In 1906 he became the first physician in North Carolina to restrict his practice to general surgery. In 1897 Dr. Royster submitted to the *North Carolina Medical Journal* a paper entitled "External Urethrotomy Without a Guide", the first operation of its kind recorded in the state.

Dr. Royster owned the first Valentine irrigator in North Carolina in 1899, and had in his possession a Harris segregator, an ingenious device designed to collect separate ureteral specimens in the female. He recalls having assisted Dr. Augustus W. Knox, an older confrere, in a medium lithotomy, requiring 6 hours, in 1900. It was Dr. Royster's inspiration and encouragement that led Dr. Claude O. Abernethy, first North Carolina physician outside of Charlotte to devote his attention to urology, to enter this field. Dr. Royster's practice covered a wide area and his experience with urological problems was abundant. In 1912 he published in the *INTERNATIONAL CLINICS*, Vol. II, 2nd Series, "Observations on Surgery of the Kidney", a comprehensive treatise dealing with stone, tuberculosis, displacements, sepsis, tumors and injuries, citing examples of each condition. He observed that many patients with kidney stones developed addiction to morphine.

Any discourse on the history of urology as a specialty in North Carolina must stem from and revolve about the life and work of Dr. Andrew J. Crowell, born in 1867 in Union County. The development of urology in North Carolina received impetus and inspiration from Dr. Crowell, whose pioneering spirit led him to be the first in the state to devote his undivided attention to the specialty at the turn of the twentieth century. Dr. Crowell became widely known and revered, not alone for his scientific proficiency, but for his unceasing efforts in the interest of urology in his state and nation. He received his medical degree from the Univer-

sity of Maryland in 1893. Thereafter he did general practice for five years in China Grove, and for three years in Charlotte. Early in 1901, when the specialty of urology was yet in its infancy, he spent six months at the Polyclinic and Post-Graduate Hospitals in New York and at the Johns Hopkins Hospital in Baltimore. Some indication of the status of the specialty in those days may be gathered from Dr. Crowell's own words: "I first went to New York but soon found they taught nothing but venereal diseases and their complications. Naturally I was disappointed and moved to Hopkins in about 3 months. During my stay in New York I saw only one prostatectomy. I don't think I saw a single kidney operation of any kind or an observation cystoscopy. Ureteral catheterizations were not mentioned and of course no attempt was made to do them. I did myself the first ureteral catheterization I ever saw and the second prostatectomy I ever saw.

"When I came back to Hopkins, I found Dr. Young had just married and was on his wedding vacation. However, his assistants were quite courteous, needing help, and put me to work in the dispensary where I obtained valuable experience in venereal diseases. On Dr. Young's return I soon found urology offered wonderful opportunities."

Dr. Crowell's zeal and enthusiasm were never abated until his death on September 21, 1938. When he located in Charlotte in 1901, he became the first man between Atlanta and Baltimore to limit his practice to urology.

Dr. Crowell's initiative is affirmed by his almost annual appearance for many years on the program of the North Carolina Medical Society after 1902. He discussed comprehensively such topics as "Retention of Urine", "Surgery of the Prostate", "Use of the Cystoscope", "Conservative Prostatectomy" and "Hematuria". He did monumental work on urinary tuberculosis and the conservative management of ureteral calculi.

In 1912 Dr. Crowell, with Dr. James Squires, organized the Crowell Clinic of Urology and Dermatology in Charlotte. The Crowell Clinic soon established Charlotte as the urological center for a large area and gave to many men post-graduate training in urology. Many of the graduates of the North Carolina Medical College at Charlotte, now closed, entered the field of urology, some re-

ceiving their training from Dr. Crowell and his associates. Among those who devoted their attention entirely to urology were Drs. James Squires, S. Raymond Thompson, William C. Mebane, Milas B. Rozzell, Hamilton W. McKay, Wilmer L. Grantham, and V. M. Long. Others who gave considerable time to the specialty were Drs. John L. Ransom, W. E. Wishart and F. D. Austin.

Dr. S. Raymond Thompson, past secretary-treasurer of the Southeastern Section, became associated with the Crowell Clinic upon his graduation from the North Carolina Medical College in 1914. He thus became the second North Carolina physician to practice urology exclusively. Dr. Thompson played a prominent role in the affairs of the Crowell Clinic from 1914 to 1939, when his connection with the Clinic was discontinued. The staff of the Crowell Clinic is now headed by Dr. Claude B. Squires, brother of Dr. James Squires, associated with the Clinic since his graduation from the Jefferson Medical College in 1918.

The history of the development of transurethral resection is linked closely with the Crowell Clinic. In 1930 Dr. T. M. Davis, of Greenville, South Carolina, having perfected the Davis high frequency current, became associated with the Clinic in the capacity of resectionist. Dr. Davis did yeomen service in developing the type of electric current and technique essential for the successful accomplishment of a procedure which has revolutionized the management of many prostatic problems.

Those men associated with the Clinic have contributed much to the urological literature. The work of the Clinic continues as a living memorial to the inspiration and leadership of its founder. At the 1938 annual meeting of the North Carolina Urological Association, dedicated to the memory of Dr. Crowell, first president of the Association, the address was delivered by his pupil and contemporary, Dr. V. M. Long, who began the practice of urology in Winston-Salem in 1916.

It was almost a decade and a half after Dr. Crowell became the first urologist in North Carolina before a physician outside of Charlotte devoted himself exclusively to the specialty. Dr. Claude O. Abernethy, graduate of the Medical School of the University of North Carolina in the class of 1906, became a general practitioner in Raleigh. In 1912, at the behest of Dr. Hubert

A. Royster, Dr. Abernethy began to do observation cystoscopies, but it was not until 1915, after post-graduate study in Philadelphia, that he confined his practice exclusively to the specialty. This he did until his retirement in 1935.

In the same year, 1915, Dr. William C. Mebane, graduate of the North Carolina Medical College in the class of 1905, located in Wilmington following his training in urology at the New York Post-Graduate Hospital.

Urology in North Carolina has received much of its impetus to progress in the last two decades through the tireless efforts of Dr. Hamilton W. McKay, graduate of the North Carolina Medical College in 1909 and of Jefferson Medical College in 1910. Dr. McKay began to practice urology in Charlotte in 1918. About ten years later his brother, Dr. Robert McKay, trained by Dr. Hugh Young, became associated with him. Dr. Hamilton McKay was largely responsible for the organization of the North Carolina Urological Association in 1930. It was out of this idea for a formal organization of the urologists in the state that a plan was formulated to organize the Southeastern Branch Society, to become a part of the parent organization, the American Urological Association. Excerpts from the following correspondence indicate something of the origin of the Southeastern Branch Society, now the Southeastern Section, which has become a thriving organization with more than two hundred members, and includes North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Tennessee and Kentucky.

Dr. Hamilton McKay to Dr. James J. Ravenel of Charleston, South Carolina, July 19, 1929 in reply to a letter suggesting a joint organization of the urologists of North and South Carolina: "I am very much interested in your proposal to have North Carolina urologists join you in a joint urological association If any thing comes of these ideas, I would certainly like to see us apply for a branch of the American Urological Association in this section of the South."

Dr. Hamilton McKay to Dr. Alexander Randall, then secretary of the American Urological Association, on November 13, 1929: ". . . For two or three years I have been interested in the organization of a South Atlantic or Southeastern Branch of

the American Urological Association and I want to know how to go about doing some intelligent work to bring such an organization into being . . . I believe you will agree with me that such an organization would both stimulate and elevate urology and probably make the parent organization stronger throughout the South.

"As I remember it, we have about fifteen members of the American Urological Association in the Carolinas, and I believe they would cooperate in the organization of such a branch."

Dr. Hamilton McKay to Dr. C. O. Delaney of Winston-Salem, October 24, 1929: ". . . If we organize a tentative North Carolina Urological Association, I am sure we could join with South Carolina, Virginia and say, Georgia and some of the other states and we would have an impressive application to present to the national body, to allow us to establish a branch in this section of the South . . ."

Dr. Hamilton McKay became president of the Southeastern Branch Society in 1935.

Facilities for the post-graduate training of urologists have been slow to develop in North Carolina. Dr. William M. Coppridge, after his graduation from the Jefferson Medical College in 1918 and his urological training under Dr. B. A. Thomas in Philadelphia, located in Durham in 1920. He established a Department of Urology in the Watts Hospital. His constant efforts resulted, in 1939, in the approval of this department for the training of residents and for post-graduate instruction in urology, the first non-teaching department in North Carolina to be thus recognized by the American Medical Association.

Dr. Coppridge has been vitally interested in the growth of the specialty in North Carolina and in the South. His interest in furthering the organization of those devoting themselves to urology is suggested in the following excerpt from a letter to Dr. Claude B. Squires, January 13, 1930: "I agree with you that medicine in this state is highly organized but somehow it seems that the urologists are pretty much left out of all groups. It is true that we are permitted to read papers before various sections, but so far as getting together as a bunch of men interested in each other, we do not have the privilege. I wrote Dr. Greenwood a year or so ago following a conversation that we

had in Chicago about the urologists in North Carolina getting together in some kind of informal meeting several times a year . . . I think the American Urological Association is a great organization and I believe that a North Carolina, South Carolina and Virginia branch will be beneficial to us all, but what I think would be of far more help to us than anything else, is the formation of a North Carolina group affiliated with the sectional and national groups."

Among the other urologists beginning their practice in North Carolina in the second and third decades of this century was Dr. Wilmer L. Grantham, who trained under Dr. Hugh Young and located in Asheville in 1919 to become the first urologist in that locality. He was shortly followed in 1921 by Dr. A. Barte Greenwood, for several years connected with the State Laboratory of Hygiene prior to his post-graduate work in urology in New York City. Dr. Thomas R. Huffines, graduate of the University of Indiana in 1919 began the practice of urology in Asheville in 1923. Dr. C. O. Delaney settled in Winston-Salem to practice urology in 1924. Dr. Delaney was the second man in the state to do transurethral resections. Dr. Fred M. Patterson located in Greensboro in 1928, having graduated from the University of Pennsylvania in 1924.

In 1930 the founding of the Duke University Medical School at Durham, of which the state is justly proud, marked the establishment of the first department devoted to formal training of urologists in North Carolina. Dr. Edwin P. Alyea, the head of this department, graduated from Johns Hopkins Medical School in 1923 and spent three years, 1926-1929, with Dr. Hugh Young. This department will surely furnish the state with many men well-trained in the specialty in the years to come.

Reference has previously been made to the organization of the North Carolina Urological Association in 1930, an important milestone in the progress of the specialty in the state and linked inseparably with the formation of the Southeastern Section. The first meeting of the organizing group was held at Greensboro, January 30, 1930, arranged by Drs. Hamilton McKay, C. O. Delaney, F. M. Patterson, and J. A. Keiger. The following urologists were invited to attend this organization meeting: Drs. C. O. Delaney, F. M. Patterson, Kenneth E. Montgomery, James

A. Keiger, A. B. Greenwood, Thomas R. Huffines, Wilmer L. Grantham, Sidney Smith, R. H. McFadden, Hamilton W. McKay, Robert W. McKay, A. J. Crowell, C. B. Squires, S. R. Thompson, W. M. Coppridge and O. LeGrand Suggett.

This association has grown to a membership of more than forty. Its annual meetings are characterized by good programs, both social and scientific, with speakers from within its membership and prominent urologists from other sections. During recent years a large number of excellently trained young urologists have located in North Carolina, thus insuring the prospect of a bright future for the specialty in this state.

It has been the purpose of the author to collect in this brief essay some facts about the origin and growth of the specialty of urology in North Carolina. Apologies are extended to the many heroes left unsung. Grateful appreciation is expressed to Dr. William M. Coppridge for wise counsel and inspiration, to Dr. Hamilton McKay for the use of his file on the North Carolina Urological Association, to Dr. Hubert A. Royster of Raleigh for invaluable information, to Dr. Arthur M. Shipley of Baltimore for data concerning Dr. Caleb Winslow, and to all members of the North Carolina Urological Association who so willingly supplied much of the material.

His First Cereal Feeding

The baby's first solid food always excites the parent's interest. Will he cry? Will he spit it up? Will he try to swallow the spoon? Far more important than the child's "cute" reactions is the fact that figuratively and physiologically, the little fellow is just beginning to eat like a man.

It is a fortunate provision of Nature that at the time the infant is ready to receive the nutritional benefits of cereal, his taste is unspoiled by sweets, pastry, condiments, tobacco, alcohol and other things to which adult palates and constitutions have become conditioned.

Many a parent, with limited knowledge of nutrition, attempts to do the baby's tasting for him. Partial to sweets, the mother sweetens her child's cereal. Disliking cod liver oil, she wrinkles her nose and sighs: "Poor child, to have to take such awful stuff!" The child is quick to learn by example, and soon may become poor indeed—in nutrition, as well as in mental habits and psychological adjustment.

Appreciating the importance and difficulties of the physician's problem in establishing and maintaining good eating habits, Mead Johnson & Company continue to supply Pablum in its natural form. No sugar is added. There is no corresponding dilution of the present protein, mineral and vitamin content of Pablum.

THE VETERANS ADMINISTRATION

B. A. COCKRELL, M. D.

Chief Medical Officer,

Veterans Administration Facility

FAYETTEVILLE

The background of the Veterans Administration extends far into history. Genghis Kahn in his conquest of Asia found it to his advantage to preserve his man power, and provided a crude system of patronage for his followers who were disabled in battle. For generations following, certain steps of progress were made in the care of veterans, although this care slumped to its lowest state during the feudal days of medieval Europe.

At the time of the Revolutionary War England was probably foremost in its care of disabled soldiers and sailors, providing a home with medical care and religious guidance for these older people. At first the provisions were for those who had lost limbs only; later it extended beyond this point, and, at the same time, certain monetary benefits were given in various instances. Oftentimes land grants or charter rights were provided. Following the Declaration of Independence of this country and the termination of the Revolutionary War, a system of benefits was provided which comprehended largely the provision of land grants. Later small monetary benefits were provided. The first monetary benefits came about the beginning of the nineteenth century. The system grew and was perpetuated through the Pension Bureau, which, for many years, was a branch of the Department of Interior. Land grants continued with decreasing frequency and size even until the end of the nineteenth century. In fact, certain land grant privileges, or settlement of Government land, were provided subsequent to the World War.

In October of 1917 the Congress of the United States enacted legislation providing War Risk Insurance, which was generally supposed to supplant pensions; but in no place in the Act did that specific provision appear. The National Home Service for disabled veterans was first inaugurated in 1866; then following the World War came the Bureau of War Risk Insurance, and the Federal Board of Vocational Education. Com-

Read before the Fifth District Medical Society, Fayetteville, October 24, 1940.

pensation was provided, vocational training was furnished, treatment was given; and, where a veteran elected, he still might receive a land grant in lieu of vocational education. The examinations and treatment were conducted by the U. S. Public Health Service, which brought a fifth Government agency into the picture.

In August of 1921 the Veterans Bureau was created by consolidating the Federal Board of Vocational Education, the Bureau of War Risk Insurance, and most of the medical activities of the Public Health Service. From time to time various legislation was enacted providing ever-increasing benefits to veterans, including compensation for disabilities which arose within a prescribed period subsequent to service, and were therefore presumed to be connected with service.

In 1925 and 1926 the Veterans Bureau took over all hospitalization of veterans from the Public Health Service.

In July of 1930 the Veterans Administration came into existence by the further consolidation of the Veterans Bureau, the Pension Bureau, and the National Home Service. The benefits provided by the Veterans Administration, including the non-service pension, continued to increase until the Economy Act of 1933 was passed, at which time many reductions were made both as to entitlement to benefits and as to the degree of payments for disability. However, since that date various laws have leveled off the extremes of legislation, and the Administration has resumed a more nearly normal growth, until now there are ninety facilities, or hospitals, under its exclusive jurisdiction. There are also approximately a dozen Regional Offices yet remaining. At one time there were fifty-four, but they have gradually disappeared by consolidation with hospitals to form what is termed a "Facility", where all phases of a claim may be properly handled—whether it be for compensation, pension, insurance, out-patient treatment, or hospitalization.

During the entire time since the close of the World War the various agencies administering to the needs of veterans have obtained hospitalization for them in other Government hospitals. Only service connected disabilities may be treated in hospitals other than Government hospitals, except that special provisions of the law have permitted emergency hospitalization of women in private, city or state hospitals.

The Veterans Administration is headed by a Central Office and is under the direction of the Administrator of Veterans Affairs. He has Assistant Administrators, Directors of Services, Chiefs of Divisions, and so forth, much in the order of the formation of an army corps. The Central Office employs about 6,000 persons, and there are approximately 40,000 people employed throughout the United States and its insular and foreign possessions. Of the group in the Central Office, the Medical and Hospital Service is headed by a Medical Director with an Executive Officer, a Counsellor and four Division Chiefs. The professional personnel of the Central Office consists of seventeen doctors and dentists, with approximately ninety clerical employees and sub-professional personnel. This group, in addition to promulgating the regulations for their Service, administer to the Medical and Hospital Service throughout the country, assigning professional and sub-professional personnel, supervising promotions, demotions, transfers, procurement of equipment for hospitals, the furnishing of food and clothing to patients, out-patient treatment, and the various and sundry duties that go with such an organization.

The vast majority of the appropriation each fiscal year which is provided for the Veterans Administration goes for compensation and pension. Less than 15 per cent, or approximately \$80,000,000 annually, is provided for the Medical and Hospital Service for all purposes including maintenance of existing Facilities, salaries of personnel of the Medical and Hospital Service, food for patients, medicines, equipment for out-patient treatment, orthopedic and prosthetic appliances, and adequate clothing for indigent patients. This sum also must cover the cost of examinations of veterans for compensation, pension, or insurance purposes, and to determine the need of hospitalization.

The size of the appropriation for the Medical and Hospital Service makes it imperative that strict economy be observed; and, yet, no benefit or treatment may be denied a veteran requiring hospitalization or treatment when he is entitled thereto. Accordingly, with careful management, the Administration is able to provide hospitalization in such an institution as this Facility at an average rate of \$3.75 a day per patient. This covers every expense connected with

hospitalization and treatment, including salaries of physicians, nurses, technicians, hospital attendants and the dietetic staff and personnel.

The Administration has three distinct types of hospitals: first, those for the treatment of tuberculosis, a disease which reached the peak load about 1927; second, the neuropsychiatric hospitals, where only mental and neurological cases are treated, not psycho-neurotics. These now require the largest number of beds, and it is anticipated that the peak load of these conditions will not be reached until about 1947. The third type of hospitals are those for general medical and surgical cases. There is a steady increase in cases of this type and it is anticipated that the peak load will not be reached until some time after 1960. These dates are based upon the existing war veteran load, with the normal complement of peace time veterans, but would have to be revised in the event of a prolonged national emergency or another war.

I know you are interested in the type of cases which are eligible to receive hospitalization or domiciliary care.

There are two major divisions of eligibles: first, war veterans, irrespective of the war in which they served; second, peace-time veterans.

There are two major divisions of eligibility for hospitalization: first, for service connected disabilities; second, for non-service connected disabilities.

The minimum requirement for hospitalization or domiciliary care for a war veteran is that he must have served during a war and must not have been dishonorably discharged, and he must swear that he is unable to defray the costs of hospitalization or domiciliary care. The minimum requirement for a peace-time veteran for hospitalization is a discharge from service because of a disability incurred in line of duty, or the receipt of a pension because of a service connected disability. Either of these conditions makes a veteran eligible, if it is affirmatively shown that he is unable to defray the costs of hospitalization or domiciliary care. The war veteran must swear that he is unable to pay to be entitled to hospitalization of a non-service disability. However, a peace-time veteran is entitled to hospitalization for a non-service disability only when he is in

fact unable to pay and is not entitled to the treatment from any other source.

Both war and peace-time veterans are entitled to hospitalization for their service connected disabilities irrespective of their ability to pay.

The dates of wars are definitely defined, and the one with which you are most concerned is the World War which began April 6, 1917, and officially ended November 11, 1918. An enlistment ending after April 6, 1917, or beginning before November 11, 1918, from which the applicant was discharged other than dishonorably, entitles him to the classification of a war veteran. If he needs hospitalization for a service connected disability he has precedence over the case needing hospitalization for a non-service disability. However, in either event, first consideration is given to the applicant who presents the greater need, and provisions are always made for emergency cases.

Hospitalization may not be provided in private institutions unless for a service connected disability, except, as previously stated, in emergency female cases. This is in accordance with the law and is not a regulatory provision. Oftentimes veterans feel that they have a service connected disability, but the term as used herein refers to a disability which has been adjudicated by the Veterans Administration as service incurred. Hospitalization for service connected disabilities outside of Government hospitals must have prior written authorization; or, in the event of a true medical emergency where the condition of the patient prohibits removal and where Government facilities are not feasibly available, reimbursement may be made later provided he was in receipt of compensation for that specific condition at the time he was hospitalized.

The women who are eligible for hospitalization include the nurses who served during the World War or subsequent thereto, yeomanettes of the U. S. Navy during the World War, contract nurses who served during the Spanish American War, and those women who served in France with base hospitals during the World War under orders from the War Department. This does not include nurses or entertainers who served overseas with either the Red Cross, the Y.M.C.A., or other agencies.

Soldiers who served in the Confederate

Army during the war between the states are not eligible to receive hospitalization through the Veterans Administration, since they have not served in the army of the Federal Government.

Those persons who served with the armed forces of the United States between April 21, 1898, and July 4, 1902, if not dishonorably discharged, are eligible for hospitalization, irrespective of where they served. This entire group of persons who served in the Spanish American War, the Philippine Insurrection, and the Boxer Rebellion are considered veterans of the Spanish American War.

A thought worthy of careful consideration was expressed on Dedication Day by Colonel George E. Ijams, Assistant Administrator, who brought out the fact that, aside from the service connected veterans who are entitled to treatment for their war or peace-time disabilities, the entire remaining group are primarily men or women who, if not furnished treatment by the Federal Government, would have to be furnished treatment and care through the state, the county, the city, or a charitable organization.

In the past, one of the greatest difficulties in securing full cooperation between private physicians and the Veterans Administration has been the subject of examinations and recommendations for hospitalization or for increased ratings. First, let me state that a veteran who has no service connected disability may not be hospitalized on his request or on the recommendation of the private physician for the purpose of securing examinations or observation to determine the need of hospitalization or to secure increased benefits.

The physicians of the Veterans Administration work as a unit, the opinion of each physician and his findings being coordinated with those of all others who examine or see the patient. It has been a long established rule with the Administration that diagnoses are expressions of opinion, while the physical findings and objective symptoms are the facts in the case. In other words, examining physicians know that their physical findings constitute the findings of fact, but that their diagnoses are merely opinions as to what the condition may be. Accordingly, if you desire to assist a veteran in obtaining hospitalization, you can best do so by submitting physical findings, objective symptoms, and

laboratory findings. An application bearing merely a diagnosis and a recommendation that the applicant be hospitalized cannot be approved without physical findings to substantiate the diagnosis.

Please allow me to assure you that this is not medically empirical, but is a requirement of our Government, since action culminating in the hospitalization of a veteran is an authorization of an expense against the Treasurer of the United States.

Often a veteran applies for hospitalization and gives a history which leads the physician to believe that he has some condition requiring treatment, when, in fact, he is seeking monetary benefits and is using that means of reopening his claim. The records on file in the Administration may show that similar complaints from this particular applicant have been investigated time after time, and have been found to be such as to necessitate the determination that he is not in need of hospital treatment. Such a determination is not a reflection on the physician or his recommendation, neither is refusal of hospitalization to an applicant who is found by official records to be ineligible from a legal standpoint.

As a result of wars within the past seventy-five years, there has developed a class of cases which has been variously diagnosed as war neurosis, shell-shock, or one of the recognized psychoneuroses. Our experiences have taught us that each additional benefit or period of treatment given such cases has been of no avail, but has actually implanted these conditions more deeply. Consequently, hospital treatment is not given for psychoneuroses except in the more severe stages.

Contrary Laws.—Two contrary laws seem to be wrestling with each other nowadays; the one a law of blood and of death ever imagining new means of destruction and forcing nations to be constantly ready for the battlefield—the other, a law of peace, work and health, ever evolving new means of delivering man from the scourges which beset him. The one seeks violent conquests; the other, the relief of humanity. The latter places one human life above any victory; while the former would sacrifice hundreds of thousands of lives to the ambition of one. The law of which we are instruments seeks, even in the midst of carnage, to cure the sanguinary ills of the law of war; the treatment inspired by our antiseptic methods may preserve thousands of soldiers. Which of these two laws will ultimately prevail, God alone knows. But we may assert that science will have tried, by obeying the law of humanity, to extend the frontiers of life.—Louis Pasteur.

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APRIL, 1941

THE EIGHTY-EIGHTH ANNUAL SESSION

The eighty-eighth annual session of the Medical Society of the State of North Carolina will be held again at Pinehurst, on May 19, 20, and 21. This is a week later than last year's meeting, and two or three weeks later than the former customary first week in May. The change was made last year at the request of a number of our most active members, who belonged to special groups that also met the first week in May. Apparently the change was a popular one, for last year's attendance was the highest yet recorded.

The popularity of Pinehurst and of the Carolina Hotel is shown by the society's decision to return again for this year's meeting.

President Hubert Haywood has been on the job quietly but efficiently this year, and has spared no effort to keep the affairs of the society going smoothly. His task has been made harder by the demands of a legislative year, and of the medical preparedness program. After the tragically sudden death of Tom Long, he must have shared the feeling of General Lee when he declared that in the death of Stonewall Jackson he had lost his right arm. Fortunately, Miss Margaret

Long's familiarity with every detail of the office, and the choice of Dr. Manning insured a minimum of disturbance in the administrative machinery. All the committees and section chairmen have functioned well, and have given Dr. Haywood splendid support.

Let it be remembered that it was voted last year to have two meetings of the House of Delegates on May 19. The first will convene at two o'clock at the Carolina Hotel; the second at eight p. m. This change, recommended by Dr. Tom Long, was made because more time was needed for the large amount of business to come before the House. It is the earnest wish of the official family of the society that this first meeting shall be well attended.

From the preliminary reports of the section chairmen, the scientific sessions will be well worth while. It is hard to understand how any doctor in the state who can possibly attend will fail to be present. While it is hard to think of a meeting without Tom Long, let us remember that his spirit will be with us, and that we will honor him by giving the program he had worked so hard to prepare a record attendance.

* * * *

"GOVERNOR" CARL V. REYNOLDS

Under the caption, "The Health of the Carolinas", the *Connecticut State Medical Journal*, in its March issue, says in part:

"The inaugural address of the two new governors of the Carolinas, Carl V. Reynolds of North Carolina and Burnett R. Maybank of South Carolina, are significant for their medical implications.

"Governor Reynolds calls the attention of his people to the fact that North Carolina has come to be known the world over for its pioneer work in the fields of useful endeavor, 'notably along the public health front.' During the past four years under his predecessor, Governor Reynolds emphasizes the fact that the full time public health departments in the State have increased from fifty-seven counties and four cities to eighty-one counties and six cities. It is the governor's aim to establish such full time departments in all of the 100 counties."

On behalf of this state, the NORTH CAROLINA MEDICAL JOURNAL wishes to thank our Yankee colleague, but is duty bound to point out that Dr. Carl Reynolds will not be eligible for the governorship for nearly four years, as J. Melville Broughton was inaugurated only last January. Furthermore, Dr. Reynolds is doing such a splendid job as Secretary of the State Board of Health and State Health Officer that it is doubtful if the people of North Carolina would be willing to release him, even to fill the governor's chair.

THE TRIAL OF THE AMERICAN MEDICAL ASSOCIATION

Since the first week in February the trial of the American Medical Association for "conspiracy in restraint of trade" has dragged its weary length along. It was hard to realize, even when seen in large type, that "THE UNITED STATES OF AMERICA" through its Department of (so-called) Justice, had actually instituted this suit. It was still harder to understand how the attorneys for the UNITED STATES OF AMERICA could stoop to the demagogic methods usually associated with the shyster, ambulance-chasing type of lawyer. The stenographic record of the trial, however, reveals clearly that the Government officials are basing their attack upon deliberate attempts to arouse class feeling by picturing the doctors on trial as arrogant, supercilious, mercenary individuals whose aim it is by boycott and underhand methods to defeat the champions of the dear people—represented by the lay organizers of Group Health Association, with the Sir Galahad type of medical knight errants in their employ.

It is hard to take in the bitter truth that while the great majority of the practitioners of the United States, through their official organization, are doing more than any other profession in the nation to forward the national defense program, their chosen leaders are handicapped because they must take time from the defense program to defend themselves against the government that they are trying to defend. It just doesn't make sense. To cloud one's thinking still more, the government, while sending the flower of the country's youth to training camps, allows its defense program to bog down because of innumerable strikes called by labor unions.

On February 3 the Supreme Court, by a 5 to 2 vote, ruled that labor unions could not be prosecuted for violation of the anti-trust laws. The American Medical Association is being prosecuted for exercising a privilege which labor unions hold sacred. The only difference is that the doctors act to protect the public from inferior medical service, while the labor union officials act to protect their own incomes. (Witness the common practice of charging initiation fees of \$25 to \$300 to join local unions.) The

difference, in the eyes of the present administration, is the few thousand votes of the medical profession, compared with the millions of labor votes. O, Democracy, the crimes that are committed in thy name!

* * * *

A TRAGEDY OF ERRORS

The proponents of state medicine often compare the practice of medicine with education, and insist that it is as logical that the government should provide medical care for its subjects as that it should provide for their education. There are various reasons why the analogy does not hold. Even if it did, however, there are many reasons why the doctors of the country would object strenuously to the bureaucratic methods of the politicians.

A very recent example of obnoxious political domination of the teaching profession occurred when the State Board of Education rejected the History of North Carolina recommended by the Elementary Textbook Commission, and adopted instead a decidedly inferior one. The Textbook Commission, be it remembered, is a group of experts appointed to recommend suitable textbooks to be distributed free to the school children of North Carolina. The State Board of Education is composed of laymen, most of whom know nothing about the evaluation of textbooks. They did know, however, that the book they chose in preference to the choice of the Commission was written by a politician, and that it was a little cheaper than the other. Miss Nell Battle Lewis has rendered the state a great service by exposing in the *News and Observer* the worthlessness of the book. She has found more than two hundred errors of fact, not to mention innumerable ones of grammar, punctuation, and style. The fifth grade pupils of one school are having the time of their lives, in the words of Editor John Arch McMillan, "correcting the (book) written by one politician and adopted by another group of politicians . . . When they get through with their red pencils the book will look like the first proof of *Charity and Children* from the linotype of an orphan boy who is just beginning his apprenticeship."

This is not a comedy, but a tragedy. Let the doctors of North Carolina take heed lest, in addition to exploiting the plastic minds of our children, the politicians may be allowed to traffic in their health.

SENATOR RUFUS HOLMAN

A Friend of the Doctors

During the Christmas holiday season, Senator Rufus C. Holman, of Oregon, paid a brief visit to North Carolina friends, Mr. and Mrs. Charles T. Joyce, of Winston-Salem. His visit recalled an incident that took place in Washington May 18, 1939, when a committee from the American Medical Association appeared before the Senate Subcommittee for a hearing on the Wagner Health Bill then pending. While he was not a member of this committee, Senator Holman came in at the beginning of the hearing out of respect to his friend, Dr. Robert L. Benson, who was one of the A.M.A. committee.

It had been agreed by the medical men that Dr. E. H. Cary, chairman of the committee, should introduce first Dr. Rock Sleyster, then president of the A. M. A., to speak briefly about the aims of the A. M. A.; then Dr. Walter F. Donaldson, who was to read the resolution adopted by the House of Delegates of the A. M. A., opposing the Wagner Bill. Dr. Donaldson was to be followed by the other members of the Committee, each of whom had carefully prepared arguments covering specific points about the bill. Dr. Sleyster was allowed to speak without interruption, but when Dr. Donaldson finished and turned to leave the stand, a barrage of questions were fired at him—chiefly by Senator Wagner himself. It was obvious that the physician was not prepared to debate all the proposals of the bill, and Senators Wagner and Ellender were taking advantage of his discomfiture. After a few minutes of this heckling, Senator Wagner sneered at him, "Just what do you mean?" Whereupon Senator Holman—a distinguished figure, with a veritable mane of white hair—rose from his seat and said, "It is quite evident what the doctor means. I don't see how any one can fail to understand him." Wagner turned upon him and snarled, "Nobody asked you to come in here and make a speech." Calmly Senator Holman replied, "I don't want to make a speech, but I do want to object to badgering the witness." Dr. Donaldson was allowed to resume his seat, and the court stenographer was told

to strike the remarks between the senators from the record.

That afternoon Dr. Benson told the workers of his committee the sequel to the incident. While he was having lunch with Senator Holman in the Senate restaurant, Senator Wagner came to their table and asked his colleague, "What did you mean by jumping on me so this morning?" Whereupon Senator Holman replied, "Senator, I simply wanted to remind you that these doctors are gentlemen, and are accustomed to being treated as gentlemen. And another thing for you to remember is that they have a great deal of influence with the voters in their home states."

That afternoon Senator Wagner and his ally, Senator Ellender—a left-over of the Huey Long machine—were decidedly less belligerent. The members of the A. M. A. committee know that they, and all the doctors of the country, have a friend in Senator Rufus Holman.

* * * *

REGISTRY OF MEDICAL TECHNOLOGISTS IS MOVED

It has recently been announced that the Registry of Medical Technologists of the American Society of Clinical Pathologists has been moved from Denver, Colorado, to Muncie, Indiana. Since its organization in 1928 the Registry has been located in Denver, where its work has been carried on under the administration of its distinguished chairman, Doctor Philip Hillkowitz, and Mrs. Anna R. Scott, the registrar. The increasing burden of the office, together with a recent serious illness, prompted the resignation of Doctor Hillkowitz as chairman of the Board of Registry. His successor, who was chosen by the members of the Board to fill the vacancy, is Doctor Lall G. Montgomery, the pathologist of the Ball Memorial Hospital, of Muncie, Indiana. The Registry will be situated at the hospital.

The great success of the work of the Registry has been due in large part to the enthusiastic support which has been given the work by pathologists, hospitals, and educational institutions throughout the country. It is the hope of the Board of Registry and the Registry staff that the change in location will in no way interrupt the success of the work.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

July 26, 1940

DR. WILLIAM M. NICHOLSON (reading the clinical summary): The patient, a 58 year old, white farmwoman, was admitted to the hospital complaining of low back pain and bleeding of the gums and nose of four weeks' duration.

Past History: The patient's general health had been excellent. Six years before admission to the hospital she had had recurring lower thoracic pain which was described as being dull and non-radiating. Associated with the pain was oliguria, dysuria, nocturia, urgency, pyuria and hematuria. These attacks lasted from four to six days and recurred at intervals of about six weeks, for a period of one year. No chills, fever, colicky pains or edema were associated with the attacks. She had been free from the attacks for five years.

Present Illness: During the six months that preceded her admission to the hospital the patient had noticed progressive weakness, fatigability, irritability and loss of 15 pounds in weight. Occasionally she noticed a fairly severe bilateral lumbar pain similar in character to that experienced six years before. There had been no change in her bowel habits, no tenesmus or colicky pain. Four weeks before entry she began to have frequent epistaxis, bleeding from her gums, and an increase in the severity of the lumbar pain. Several days later she passed clots of blood in her urine, with associated dysuria; this symptom persisted for only a few days and did not recur. Following extraction of two teeth she had profuse bleeding from her gums. Approximately ten days before admission she had several severe attacks of epistaxis, one of which lasted eight hours. At this time she also noticed that her stools were black and tarry, and that ecchymoses and purpuric areas appeared over her entire body. No history could be obtained of any exposure to toxic drugs or metals.

Physical Examination: The temperature on admission was 38 C.; the pulse was 98, respirations 22, and blood pressure 96 sys-

tolic, 70 diastolic. The patient was a fairly well developed, emaciated white woman with a cadaverous complexion. She was groaning constantly with pain. The skin was dry and pale. There were purpuric spots on the extremities, the face, chest and abdomen. The mucous membranes were nearly colorless. There was a small, firm, immobile nodule in the left sternoclavicular angle; there was a similar node in the right axilla. Except for some pain on motion and tenderness to palpation over the sacrum and both sacro-iliac joints, the skeletal system was normal. The pupils were quite small and did not react to light or accommodation. The sclerae were quite blue. The nose showed large blood crusts in each nostril. The lips were dry and crusted with blood; the tongue was coated and dry. Blood was oozing from the gums. On the soft palate there were a few purpuric spots. The lungs were clear. The heart was not enlarged. There was a soft systolic murmur heard at the apex and over the pulmonic area. The abdomen was distended but soft, with no masses or tenderness. The liver, spleen and kidneys were not felt. Pelvic examination revealed no abnormalities; the rectal examination was also normal except for the presence of a small amount of tarry stool. The neurological examination was normal.

Accessory Clinical Findings: The blood Wassermann and Kahn reactions were negative. The hemoglobin was 4.8 Gm., or 31 per cent. Red blood cells were 1,700,000. White blood cells were 3000. The color index was 1.0. The mean corpuscular hemoglobin content was 32×10^{-12} Gm. The mean corpuscular volume was 70 cubic micra. Platelets were 200,000. Examination of the fresh blood smear showed slight anisocytosis and poikilocytosis with a moderate number of macrocytes present; however the majority of the red cells were smaller than normal. There were a moderate number of nucleated red blood cells. Reticulocytes were estimated at 6.8 per cent. Attempts to obtain sternal bone marrow were unsuccessful. The differential formula on the peripheral blood revealed polymorphonuclear neutrophil segments, 46 per cent; stabs, 19 per cent; juveniles, 2 per cent; polymorphonuclear eosinophils, 5 per cent; myelocyte neutrophilic, 1 per cent; myelocyte eosinophilic, 1 per cent; small lymphocytes, 13 per cent; large lymphocytes, 3 per cent; monocytes,

10 per cent. Erythroblasts were 4 per cent in the peripheral blood. *Repeated urinalysis:* The urine was dark amber in color, with a specific gravity (highest recorded) of 1.015, an acid reaction, no sugar, a 1 plus reaction for albumin, two or three white cells, an occasional red cell, numerous casts, and a positive benzidine reaction. Frequent examination of the stools after ether extraction, showed a 4 plus benzidine reaction. Examination for Bence-Jones protein in the urine gave no reaction. Bleeding time by the "Ivy" method was seventeen minutes; the clotting time was four minutes. The blood non-protein nitrogen was 49 mg. per 100 cc., and the blood uric acid was 4.9 mg. per 100 cc. The serum van den Bergh gave an indirect reaction, with 1.2 mg. of bilirubin per 100 cc. The serum calcium was 10.4 mg. per 100 cc., and the phosphorus was 5.1 mg. per 100 cc. The phosphatase was 11.2 Bodansky units. The serum albumin was 4.6 Gm. per 100 cc., with an albumin-globulin ratio of 1.7:1. The prothrombin time was 25 seconds; the control was 16. Gastric analysis revealed 0.6 cc. of 0.1 normal free hydrochloric acid after histamine. An x-ray of the skull showed no abnormalities. A flat plate of the abdomen showed what appeared to be a collection of gallstones. The kidneys were not clearly seen. The spine and pelvis showed no evidence of metastases. There was marked distention of the loops of small intestines noted in the flat plate of the abdomen. A gastro-intestinal series could not be satisfactorily performed; however, the six-hour barium was present within large loops of dilated ileum, and at twenty-four hours the barium was still in the tremendously dilated loops of the small bowel.

Course in the Hospital: The patient remained in the hospital for thirteen days. Transfusions were started immediately, and during her stay in the hospital she received a total of twelve transfusions, each of 500 cc.. Within the first three days of hospitalization she showed some signs of improvement, but there was never any cessation of bleeding from the mouth. There was progressive distention of the abdomen, and a few days before death there was bleeding from the rectum. She also developed an increasing number of purpuric spots over her entire body. There was no appreciable change in the white count during her stay,

the maximum recorded being 7600. Her temperature remained between 37 and 38 C., except on her last day of life, at which time it rose to 41 C. On the day before death the hemoglobin was 53 per cent, the red blood cells 2,770,000, and the white cells 6500, with no appreciable change in the number of platelets. On the thirteenth hospital day she suddenly became comatose and could not be aroused. Her temperature had risen to 41 C., and her blood pressure, which had previously been 114 systolic, 80 diastolic, rose to 174 systolic, 90 diastolic just before her death. Examination revealed all the extremities to be flaccid. The right pupil was dilated, and there was a large fresh hemorrhage obscuring the fundus and disk of the right side. The patient expired one hour after lapsing into coma.

Discussion

DR. NICHOLSON: The symptoms that must be explained before any satisfactory conclusions are reached regarding the final illness, are as follows: malaise, weight loss, lumbar pain, purpura, epistaxis, hematuria, melena, anemia, and coma with abnormal neurological signs.

Undoubtedly this patient had a rather extensive lesion of the central nervous system which produced the sharp elevation in her temperature and the neurological findings that were demonstrated immediately before death. Petechiae and ecchymoses were an important part of the picture, and it would appear that the epistaxis, hematuria and melena were due to the same condition—that is, abnormal bleeding. I would predict that postmortem examination will reveal multiple hemorrhages in the brain.

The anemia may be due to two factors: (1) chronic blood loss, and (2) interference with the blood forming organs. To support this view there was slight leukopenia, with an increase in the young forms, and thrombopenia. Reticulocytes and nucleated red cells were present in the circulating blood; therefore it would seem that the remaining bone marrow was making an effort at red blood cell regeneration. Since the platelets were not below the critical level, it may be that the cachexia played some role in the production of the purpura. There are several diseases that come to mind which extensively involve the bone marrow, and which should be considered in the differential diagnosis.

The differential formula of the leukocytes suggests the possibility of leukemia in the aleukemic stage; however, the absence of enlargement of the liver, spleen or lymph nodes, in a patient who has been ill for six months, would make the diagnosis of leukemia unlikely. Multiple myeloma is a distinct possibility, since the course of the disease is not unlike that presented by this patient. However, changes in the skull shown by x-ray examination are among the first findings in multiple myeloma. Since this patient did not show any abnormalities of the skull, and since no Bence-Jones protein was demonstrated in the urine, it is most unlikely that she had multiple myeloma. In hyperparathyroidism of long duration one would expect to see a picture not unlike that demonstrated here; however the duration of the illness seems rather short to produce such extreme anemia without some evidence of decalcification of the bones. Furthermore, the normal serum calcium and phosphorus, even with an elevated phosphatase, would exclude hyperparathyroidism. It would seem then that the most likely possibility to explain the bone marrow involvement is extensive invasion by metastatic malignancy.

I would like to ask Dr. Hansen-Pruss his opinion in regard to the study of the peripheral blood.

DR. OSCAR C. HANSEN-PRUSS: The peripheral blood picture is that of a severe, slightly hypochromic and microcytic anemia with leukopenia and a moderate thrombopenia. The increase in reticulocytes probably signifies some attempt at red blood cell regeneration stimulated by the persistent bleeding. There are also many erythroblasts in the peripheral blood, and these are probably, in part, another evidence of increased red blood cell regeneration. However, the number of erythrocytes is a bit high, and this suggests that factors other than an increased intramedullary erythropoiesis play a role. This possibility is further enhanced by the progressive anemia, which cannot be due merely to loss of blood, since the color index remains normal. The persistent leukopenia is also unusual for an anemia which is due only to blood loss. For this reason it is suggested that an intrinsic disease of the bone marrow is present. The best possibility is invasion of the bone marrow by some neoplasm other than multiple myeloma.

That it is not a multiple myeloma is assumed only because of the absence of plasma cells in the peripheral blood, and mainly because of the clinical data at hand. If postmortem findings should show extensive cancer of the bone marrow, some of the evidence of increased erythropoiesis is probably the result of extra-medullary red blood cell regeneration. The differential white blood cell picture does not rule out a leukemia, except that one would expect a higher percentage of immature myeloid or lymphoid series in the presence of such severe anemia in a patient who has been ill for several months. As to the purpura, the number of platelets is above the critical level for such persistent bleeding. I suggest that the bleeding is, therefore, not due simply to a lack of platelets, but to some other factor or combination of factors, such as a secondary increase in capillary permeability; decrease of the fibrinogen content of the blood might also be a derangement of hepatic function *per se*, or the result of multiple miliary implantations of cancer in the liver. In conclusion I would like to say that the blood picture suggests that this patient has a malignant process such as carcinoma with extensive invasion of the bone marrow, and that her anemia is not due only to chronic blood loss. I shall be very much interested to see whether pathological studies will show cancer in the bone marrow and evidences of extramedullary blood formation.

DR. NICHOLSON: That this patient has a malignancy is supported by the fact that six months previous to entry she felt tired, with general malaise, progressive weight loss and severe lumbar pain. Further evidence to support this view is the fact that a firm lymph node was palpable in the left supraclavicular fossa.

The suggestion made by Dr. Hansen-Pruss that the excessive bleeding may have been due to a decreased fibrinogen content of the blood is very significant in pointing to the liver as a site of metastases, particularly so in view of the elevated blood phosphatase. It is not necessary, however, to incriminate the liver, since the elevated phosphatase may be due to involvement of the bones by the malignancy.

The localization of the primary carcinoma is very difficult. Primary carcinomas of the bronchi, even though they metastasize to the bone, can be excluded by the normal x-ray

of the chest. A hypernephroma as far advanced as it would be in this patient would most surely show metastases to the lungs. At this time I would like to ask Dr. Reeves his opinion of the partial gastro-intestinal x-rays.

DR. ROBERT J. REEVES: Unfortunately a complete gastro-intestinal series could not be satisfactorily done, but we have evidence of an obstruction or paralytic ileus of the small intestine. It is possible that there may be metastatic lesions in the mesentery or retroperitoneum producing the partial obstruction.

DR. NICHOLSON: In view of the fact that there was considerable distention of the small intestine and retention of barium at the end of twenty-four hours, it would seem that an obstructive lesion was present in the small intestine or in the proximal portion of the large bowel. Cancer of the jejunum and ileum is extremely rare, and I, personally, have never seen a case diagnosed *ante mortem*. It is my understanding, however, that more symptoms of obstruction with absence of obstipation develop relatively early than with cancer of the large bowel. Certainly one would expect that this patient would have developed nausea and vomiting long before her death if the primary cancer had been in the small bowel. The one site of localization for the cancer in this patient would of necessity be in the proximal portion of the colon, which notoriously tends to produce less symptoms than a carcinoma of the distal portion. The reasons for this are:

- (1) The liquid content of the bowel in this segment.
- (2) The lesions are more apt to be large and ulcerating and occur more frequently on the lateral wall, therefore producing less obstruction.
- (3) In this portion of the colon the lumen is considerably larger and the wall is thinner than on the distal portion.

It is interesting to note, also, that carcinomas in this area frequently produce pain in the lumbar region, such as this patient had. The symptomatology of cancer of the proximal portion of the colon may be divided into three groups:

- (1) The group that has no symptoms until late in the disease.

- (2) The so-called dyspeptic group, characterized by recurring attacks of lower right quadrant pain and frequently diagnosed as appendicitis.
- (3) The group that this patient represents—that is, slow onset of weakness, malaise and anemia.

I would like to offer the following as an anatomical diagnosis of this case:

- (1) Carcinoma of the proximal portion of the colon with metastasis to the bone.
- (2) Multiple petechiae, probably in the brain.

Pathological Findings

DR. DOUGLAS H. SPRUNT: The anatomical diagnosis in this case was: colloid adenocarcinoma of the hepatic flexure of the colon with metastases to the regional lymph nodes, lungs, and vertebral, sternal and femoral marrow; fibrosis of bone marrow; partial obstruction of the colon by tumor with dilatation of the proximal and contraction of the distal segments of the colon; extramedullary blood formation in the liver and spleen; hemorrhages in the skin, gastro-intestinal tract, and renal pelvis; multiple abscesses in the kidneys; diffuse myocardial fibrosis; adenoma of the thyroid gland.

These findings are in complete agreement with Dr. Nicholson's discussion. It should be said that the bone marrow metastases were extensive. We were not allowed to examine the brain.

New Squibb Capsule Contains 5 Synthetic B Complex Factors

A miniature capsule containing five synthetic factors of the vitamin B complex is now being supplied by E. R. Squibb & Sons, New York, in Syntheplex-B Capsules. Each capsule contains:

- 1 mg. (333 U.S.P. XI [Int.] units) thiamine hydrochloride (vitamin B₁)
- 1 mg. riboflavin (vitamin G; B₂)
- 0.5 mg. pyridoxine hydrochloride (vitamin B₆)
- 0.5 mg. calcium pantothenate (a filtrate factor)
- 10 mg. nicotinic acid amide (nicotinamide)

Chief indication for the new product is in the treatment of vitamin B complex deficiency where it is desirable to increase the intake of these five factors beyond the practicable limits of dosage with natural B complex sources. Physicians wishing to experiment with pyridoxine and pantothenic acid in combination with the other synthetic B complex factors will also find it useful, as will persons who cannot tolerate yeast, or who cannot take large capsules. It is emphasized, however, that Syntheplex-B Capsules are not a substitute for a product containing the entire natural vitamin B complex.

Recommended dosage for adults is two or more capsules daily; for infants and children, one or more daily.

CLINICO-PATHOLOGICAL
CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

Presentation of Case

Mr. L. E. C., a white railroad brakeman, 53 years of age, was admitted to the hospital in a semi-comatose irrational state.

Due to the mental condition of the patient no direct information could be obtained. The information that we have was obtained from his son and from his private physician. For the past two years the patient had been getting gradually weaker, tiring more easily, and sometimes going to bed as early as 6 p. m. and always before 7:30 p. m. He arose at 5:30 a. m. to go to work at 7:00 a. m. He worked seven days a week, but during the last six months he had to take off one or two days a week to rest. His only complaint had been rheumatism which occurred just before rainy spells. Two months before admission the patient developed a cough and cold, apparently without fever, and took cough syrup to relieve his cough. About four weeks before admission, during the influenza epidemic, he was sick at home with severe cough and general malaise. He had chilly feelings followed by sweating, and for these he took aspirin. He then returned to work for about two weeks. Seven days before admission he called his private physician, complaining of pain in the left side of the chest of two days' duration. He was coughing a good deal, but would not remain in bed. His physician found no fever, but did find a large area of pleurisy in the left chest, and redness of the throat. The next day he seemed better. Two days later he was again visited by his physician, and was found to be no better. An elevated white count was found. He was given sulfathiazole, and his wife reported that he improved. Three days before admission he was again seen by his physician, and was found to be delirious and disoriented, getting up and changing from one bed to another in the house. On the day of admission a neurological consultation was held and the following findings were noted: "The patient is in a restless state, tossing from side to side in bed. He is confused, disoriented and stuporous. There are some nystagmoid movements of both eyes with evidence of improper fusing. No changes

are noted in the eye grounds. The neurological examination is otherwise not abnormal, in so far as tests could be made. There is a generalized lymphadenopathy and evidence of considerable enlargement of the liver and spleen." The patient was sent to the hospital following this consultation.

The past history is essentially negative. The patient had regularly passed his railroad physical examinations. He had never had nose bleeds, had slept well, and had had no kidney or bowel complaints. He had never had any enlargement of his lymph nodes and never any ascites.

The patient was a well developed, well nourished white male who appeared to be of the age stated. He was lying in bed in a comatose condition. The head was normal. The throat was inflamed. There was limited expansion of the chest on the left side, with dullness to percussion over the lower portion of the chest and increased breath sounds over and adjacent to this area. The heart was not enlarged, but a systolic murmur was heard over the apex. The rate was rapid and the rhythm regular. The abdomen was slightly distended. The liver was enlarged to about 3 inches below the costal margin, firm and easily palpable. The spleen was easily palpable. There was some evidence of a fluid wave. The extremities were not abnormal. The axillary and inguinal lymph nodes were enlarged, fairly hard but not tender. On admission the temperature was 105.6 F., but it fell within three hours to 102 F. The pulse was 120 and the respirations were 12. On the second hospital day the patient developed some rigidity of the neck, with a tendency to draw his head backward. His temperature ranged between 101 and 103 F., his pulse from 100-120, and his respirations from 18-20. An x-ray examination of the chest on the third hospital day was reported as follows: "Examination of the chest with the patient in bed shows some haziness in the right costo-phrenic area. While this is suggestive of a pneumonic process the changes are not typical. There is an old fibrosis in this region with a band extending from the hilus to the periphery which is probably of inflammatory origin. The chest is otherwise normal." On admission there were 3,390,000 red blood cells, 10 Gm. of hemoglobin, and 25,300 white blood cells, with 3 per cent stabs, 7 per cent segmented cells, 63 per cent lymphocytes, and 27 per cent monocytes. The urine was am-

ber, clear and acid. The specific gravity was 1.021. No albumin or sugar was present and the sediment was negative. The spinal fluid was negative. The blood Kline test was negative. Two days after admission the red cell count was 4,400,000, the hemoglobin 10.5 Gm., and the white cell count 24,100, with 12 per cent segmented cells, 51 per cent lymphocytes and 37 per cent monocytes. The patient's temperature and pulse gradually went up to 107 F. and 140 respectively, and the patient died on the fourth hospital day.

Discussion

DR. W. L. KIRBY: One point not brought out in the history is whether or not the cough was productive either before admission or after the patient came to the hospital.

DR. E. A. MACMILLAN: I think that the cough was not productive.

DR. KIRBY: I think that there are a number of diagnoses to be considered, one of which is primary carcinoma of the bronchus. The patient had a non-productive cough over a long period of time before the acute onset of illness. On the other hand, this condition would not likely produce a generalized adenopathy. The lack of pulmonary hemorrhage does not favor the diagnosis of primary carcinoma of the bronchus. Also, the cases that I have observed developed effusion during the latter stage, with dyspnea and occasionally cyanosis. I believe that we can rule out carcinoma of the bronchus.

One must consider the possibility of chronic lung abscess. The patient had a cold, followed by chills and sweats. He also had had pleurisy. On the other hand, there was no foul odor of the sputum, nor was there anything said of his having had a foul breath. The blood findings are not those of an abscess. There is a predominance of lymphocytes. Do we have any x-rays of the chest?

DR. RODICK: We only have one film. He could not hold his breath.

There is a little bit of fuzziness throughout, which is not typical of anything. There may have been something in the costophrenic space.

DR. KIRBY: The physical findings in this patient were all on the left side of the chest, while I noticed that the x-ray findings were all on the right side. The only reference to physical findings both in the home and in the

hospital were on the left side. The x-ray certainly rules out abscess.

Although the Kline test was negative, this patient had an enlarged liver, enlarged spleen, and general lymphadenopathy. If he had syphilis, it was tertiary, which diagnosis the physical findings and blood examination does not substantiate. Patients with tertiary lues who have enlargement of the liver and spleen are apt to be jaundiced. Therefore, I would pass up syphilis as a diagnosis.

Malignancy is certainly to be considered, as this man had been losing strength for two years. Possibilities are multiple myeloma, lymphatic leukemia, lymphosarcoma, and Hodgkin's disease. The onset of the disease and the rheumatic pain are both suggestive of a latent type of Hodgkin's disease. Lymphocytosis, enlarged spleen and enlarged liver are present in the late stages of lymphoblastoma. A patient may have Hodgkin's disease without enlargement of the external nodes at all. As to multiple myeloma, I am sure that there is no destruction of any of the ribs in the chest x-ray, and in the latter stage of myeloma there is usually partial destruction of the ribs, spine and skull. Frequently pathological fractures occur. The course is usually slow; the patient usually lives six or seven years. That brings us back to the lymphoblastoma group. A biopsy from one of the enlarged nodes would have been helpful in deciding which of the group this patient had. Lymphosarcoma frequently produces bulky tumors and skin nodules, which this patient did not have. The total leukocyte count is somewhat low for lymphatic leukemia in an untreated case. I would make a diagnosis of Hodgkin's disease.

DR. W. M. JOHNSON: The late Dr. D. N. Dalton had a reputation for making diagnoses of unusual cases by remembering a similar case he had had previously. The case just presented reminds me very strongly of a patient of mine who died not long ago. The duration of illness was just about the same; my patient had a suddenly developing, rather extensive pleurisy, which was followed by effusion; and his total leukocyte count did not at any time go above 25,000. He had, I am sure, chronic lymphatic leukemia. In spite of the rather low total count in this case, I think I will follow Dr. Dalton's method and make a diagnosis in this case of lymphatic leukemia.

Clinical Diagnosis

Lobar pneumonia.
Acute leukemia.

Dr. Kirby's Diagnosis
Hodgkin's disease.

Dr. Johnson's Diagnosis
Lymphatic leukemia.

Anatomical Diagnosis

Lymphatic leukemia.
Co-arcuation of the aorta.
Coronary sclerosis.
Aortic valvulitis, origin undetermined.

DR. FROST: At autopsy it was proven that this man had a lymphatic leukemia. The retroperitoneal lymph nodes were markedly enlarged. The liver extended 6 cm. below the costal margin, weighed 3,170 Gm., and was mottled with pale gray leukemic infiltrations. The spleen weighed 1220 Gm. and contained a large infarct which resulted from a thrombus of one of the large veins. The lymphatic infiltrations were found also in the kidneys. Nothing was found in the lungs except moderate congestion. In the aorta there was found a marked constriction at the junction of the descending arch and the thoracic portion, which reduced the lumen to 2.6 cm. in circumference. This finding is apparently only of academic interest, as the patient was able to pass his railroad physical examinations. Permission was not obtained for examination of the brain.

DR. BROOKS: How do you account for the large number of monocytes in the differential count?

DR. FROST: I don't remember that I saw the blood smears on this patient. I think probably they were lymphoblasts rather than monocytes.

DR. POOLE: I think that I might say here that at the time I saw him the man had influenza superimposed on this other disease.

The Practice of Medicine. — The recipe of the practice of medicine contains two important ingredients, the science and the art of medicine, which must be so subtly blended that a mixture is created that does not predominate in one constituent at the expense of the other. Furthermore, the same blend is not appropriate for all occasions; the mixture must be one that lends itself to expert administration in varying individual instances.—F. A. Willius, M.D.: A Talk on the Science and the Art of Medical Practice, Proc. Staff Meet., Mayo Clinic, 15:648 (October 9) 1940.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Malpractice: Application of the Doctrine of Res Ipsa Loquitur. This rule, which loosely means 'the thing speaks for itself', is no doubt familiar in a way to most physicians, especially to those who have been so unfortunate as to have had personal experience with malpractice litigation. This rule has been invoked quite extensively in cases against physicians and surgeons in suits for negligence in the treatment of patients. To illustrate the application of the doctrine, or at least one phase of it, a case was selected in which a textile operative 54 years of age brought suit against a well known and reputable surgeon for an injury alleged to have been caused by the negligence of the defendant in not using due skill and care while the plaintiff was a patient in the defendant's hospital, under his treatment. The facts as alleged in the complaint are essentially as follows: The patient, following an automobile accident, was admitted to the defendant's hospital in an unconscious condition, and upon examination the small bone of the leg was found to be fractured somewhere between the knee and ankle. The defendant immediately applied a cast on the affected leg, and after twenty-five days, as the healing was unsatisfactory, the doctor deemed it advisable to fracture the large bone and reset the fracture and apply another cast. This was done. Subsequently, according to the complaint (the exact time was not given), the leg became swollen, and burst, and abscesses formed. The patient also complained of cuts sustained by faulty equipment, and alleged that when he left the hospital after seventy days the injured leg was turned inward at a right angle, so that he could not walk without the foot coming in contact with the opposite leg each time he attempted to take a step. There were also the usual complaints of physical suffering, mental anguish and permanent injury. The patient's testimony was mostly in substantiation of the facts alleged in the complaint, and it is indicated that the jury had an opportunity to observe the results of the treatment; however, according to records, no medical testimony was offered in his behalf.

In answering, the defendant denied the allegations of the plaintiff, and as a further defense said that the plaintiff's injuries, if any, were due to his own carelessness and failure to follow instructions at the time he left the hospital. The defendant did not offer any testimony, but at the completion of the plaintiff's evidence his lawyer asked for and was granted a nonsuit, whereupon the plaintiff appealed. It is reasonable to assume that the defendant was in a position to offer testimony in rebuttal which would throw a more favorable light on his side of the question, but as the case was nonsuited at the completion of the plaintiff's evidence, this was not necessary at the time.

It was held in this case as follows by the Court of Appeals: "The granting of defendant's motion to nonsuit at the close of the plaintiff's evidence was error, plaintiff's injury being simple in its nature and the results shown by the evidence being so grotesquely contrary to all human experience as to afford some evidence for the jury that the bones were never properly set or were permitted to grow out of their proper relation through want of due care and attention." And as further remarks, the court stated: "We are urged to adopt the view that recovery cannot be had in any suit against physicians and surgeons for malpractice in the absence of expert medical testimony, except where the facts give rise to the application of the doctrine of res ipsa

loquitor." The above simply means that when one sues a doctor for negligence in treatment that it is incumbent upon him to furnish expert testimony with reference to the matter; otherwise he will be precluded from recovering. However, if the results are non-technical and are such as can be recognized and understood by the ordinary person the rule of *res ipsa loquitor* will be invoked.—North Carolina Supreme Court Report, Book 214, p. 71.

BULLETIN BOARD

PRESIDENT'S MESSAGE

North Carolina's Unsolved Medical Problem

The effort to bring health to all of our people is now on the minds and consciences of all the citizens of the United States.

In January, 1941, the Medical Induction Board at Fort Bragg reported the rejection of 422 out of 2403 recruits examined. This number was 17.5 per cent of the total number of selectees from North Carolina appearing before the board. This number does not include those rejected by their own local medical boards, which will more than double these figures. In other words, 40 per cent of our young men are physically unfit. The proportion of these men with remediable defects was high.

Government agencies are now planning to bring medical aid to the indigent of this defective group, in order that they may be rehabilitated for useful military or civilian work. We should remember that there is no free medical aid given by the government, because it is all paid for by the taxpayers of the country. The only really free medicine is that given gratuitously by the physicians themselves to the indigent or to those that class themselves as such. In 1940 North Carolina paid into the National Treasury \$329,191,420 in federal taxes. The sum of \$875,169 was made available by the Federal Government in 1940 to the North Carolina State Board of Health. This sum was distributed to the County Health Division, the Division of Maternal and Child Welfare (including the Crippled Children's Service), and the Division of Venereal Disease Control. In 1939 the State Legislature allotted a total of \$438,370 to the State Board of Health. The North Carolina State Board of Health in its personnel and in the service rendered to the people of the state compares favorably with any state in the Union by the standards set by the United States Public Health Service,

the United States Children's Bureau, the International Health Board of the Rockefeller Foundation, and the American Public Health Association. In spite of these facts, we still have nineteen counties which have not co-operated in appropriating funds for whole time public health departments.

On the basis of a population of 3,500,000 people in the state, the \$1,313,539 in tax money from all sources entrusted to our excellent State Board of Health for all health services to all the people of the state allows only 37 cents per person for the year. It is true that many people of our state do not directly need the gratuity of this organization and its funds, yet in a direct as well as an indirect way its influence on the population as a whole is a necessary and potent factor in the preservation of its health. In 1938 North Carolina ranked forty-fifth in the United States in hospital beds of all kinds, with 5.05 beds per 1000 inhabitants. The average in the United States was 8.9 beds per 1000 inhabitants. In 1936 North Carolina ranked forty-sixth among the states in physicians, with one practicing physician per 1,346 inhabitants. Durham County has one licensed physician for every 261 inhabitants; Tyrell has one for every 5,164 inhabitants. There are 141 colored physicians in the state. In the fourteen counties where they serve they represent one physician for every 5,890 of the country negro population, and one for every 1,699 of urban negro population. The other fifty-six counties contain 88,105 negroes.

The problem for North Carolina is how to meet the medical needs of our state. We cannot redistribute our physicians, as economic and scientific factors influence their location. The care of the indigent is, of course, the weakest point in the program. The weakness here seems to be the inadequate sums appropriated by our legislative bodies to pay for medical care. No county has as yet found a real solution to the problem of providing equal medical care to a population which includes indigents and millionaires. Compulsory sickness insurance meets a small section of the problem by giving the low income groups a superficial service paid for by distributing the burden over both well and sick, and among employees, employers and the government; but this leaves the indigent untouched. There is a growing class of the medically indigent in North Carolina. Some are worthy, many are not. Good food, good

housing, and good sanitation are fundamental to health. They are lacking among the indigent. To meet these problems more generous appropriations of tax funds spent under medical direction and through medical centers, with the continued and expanded cooperation of health officers and local medical societies and physicians, are a necessity. Subsidies and grants to pay reasonable medical fees, to establish new hospitals, and to maintain old hospitals where they are needed, seem imperative to a balanced program to rehabilitate the diseased and to care for the medically indigent.

HUBERT B. HAYWOOD, M. D.

SECRETARY'S MESSAGE

The opportunity to serve a friend does not come any too often. There are many doctors in North Carolina who covet the opportunity to do something for Tom Long. He served us all in season and out of season, in the Legislature and in the humbler walks of his professional life. With no pretense of taking his place, I am grateful to the Executive Committee for giving me the opportunity, and with the cooperation of many friends, I am encouraged in the hope that the duties of the office will be satisfactorily performed until a successor is elected at the next meeting of the House of Delegates. I am glad to serve the Society in the interim.

I. H. MANNING, M. D.

NEWS NOTES FROM WAKE FOREST COLLEGE

The Eighth District Medical Society and the Bowman Gray School of Medicine of Wake Forest College are planning a joint program for the day of the laying of the cornerstone of the new medical school building in Winston-Salem, on April 16. Dr. Nathan B. Van Etten, President of the American Medical Association, will be the guest speaker for the occasion. The program for the day is as follows:

Eighth District Medical Society Meeting 1:30 p. m.

Dr. Robert L. McMillan: "Massive Hemorrhage from the Stomach and Duodenum—Its Causes and Treatment"

Discussant—Dr. Wingate Johnson.

Dr. C. L. Haywood, Jr.: "Pre-operative Skin Disinfection with 70 per cent Alcohol by Weight"

Discussant—Dr. W. H. Sprunt, Jr.

Dr. L. D. Tyson, Jr.: "Breech Deliveries"

Discussant—Dr. C. H. Mauzy.

Dr. Samuel F. Ravenel: "Chemotherapy of Bacillary Dysentery"—Lantern Slides

Discussant—Dr. L. J. Butler.

Dr. F. K. Garvey: "Present Status of Testosterone"

Discussant—Dr. H. C. Harrell.

Dr. Paul W. Johnson, President of the Eighth District Medical Society, will preside at the above meeting.

At 4:00 p. m. the exercises of the laying of the cornerstone will be held. Dean C. C. Carpenter will preside.

Program of Exercises

Invocation: Dr. John R. Cunningham, President of Davidson College.

Greetings: Dr. W. C. Davison, Dean, Duke University School of Medicine; Dr. W. Reece Berryhill, Dean, University of North Carolina School of Medicine.

Introduction of Guest Speaker: Dr. Wingate M. Johnson, President, Board of Trustees of Wake Forest College.

Address: Dr. Nathan B. Van Etten, President, American Medical Association.

Laying of Cornerstone: Mrs. Bess Gray Plumly.

Concluding Remarks: Dr. Thurman D. Kitchin, President, Wake Forest College.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

An active program of research on the chemistry and metabolism of quinine and related compounds is being carried on by the Department of Biological Chemistry of the Medical School of the University of North Carolina. In this work the above department, directed by Dr. James C. Andrews, is cooperating with Dr. Harold W. Brown of the School of Public Health of the University of North Carolina in an investigation of the behaviour of quinine in malaria cases complicated by hookworm. This research program is being supported by the Samuel S. Fels Fund of Philadelphia.

Two papers from the Department of Biological Chemistry are now in press: one entitled "The Optical Activity of Quinine and Some of Its Salts in Mixtures of Water and Ethyl Alcohol", by James C. Andrews and Bailey D. Webb to be published in the Analytical Edition of *The Journal of Industrial and Engineering Chemistry*, and the other entitled "The Estimation of Small Amounts of Quinine in Blood and Other Biological Materials", by Granvil C. Kyker, Bailey D. Webb and James C. Andrews, in *The Journal of Biological Chemistry*.

* * *

Dr. M. J. Rosenau, Dean of the School of Public Health, was called to Washington during March to attend a conference with the Surgeon General of the U. S. Public Health Service relative to the organization of orientation course for new public health personnel to be employed in national defense work.

* * *

Dr. A. Watts Makepeace and Dr. Lawson will attend meetings in Washington on March 24, 25, and 26 in connection with the maternal and infant work of the Children's Bureau, U. S. Department of Labor.

* * *

Professor H. B. Gotaas, of the faculty of the School of Public Health, presented a paper on the "Disinfection of the Air" at the March meeting of the Elisha Mitchell Scientific Society.

* * *

Dr. Wm. deB. MacNider, Chairman of the American Division of the Club for Research on Ageing, attended the annual meeting of this organization in Baltimore, March 22 and 23.

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Dr. John A. Ferrell, of the Rockefeller Foundation, spent some time in Chapel Hill recently visiting the School of Public Health. He talked to the students and faculty of the School.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

The North Carolina Tuberculosis Association will hold its annual meeting at the King Cotton Hotel in Greensboro on Wednesday, April 30, 1941. This will be an open meeting, and the public is cordially invited and urged to attend. The program will be a joint meeting of medical and non-medical groups. There will be a morning session beginning at 10:00 o'clock and a luncheon meeting at 1:15. Dr. H. E. Kleinschmidt, the Director of Health Education of the National Tuberculosis Association, New York City, will be the main speaker at both sessions. His topic for the morning session will be "Authorized Forms of Tuberculosis Work and County Organization". Dr. P. P. McCain, the President of the National Tuberculosis Association, will appear on the morning program. Others to talk at this session are the State President of the North Carolina Federation of Woman's Clubs; Dr. R. L. Carlton, City Health Officer of Winston-Salem; Dr. Charles W. Armstrong, First Vice President of the State Tuberculosis Association, Salisbury; and Dr. W. H. Smith, Second Vice President of the State Association, Goldsboro. The first prize winning essay in the National Tuberculosis Association national Negro College Contest will be read by its author, Miss Evelyn Love of Bennett College. The title of this essay is "The Role of the Negro College in the Control of Tuberculosis". Mrs. Charles E. Platt, of Charlotte, President of the North Carolina Tuberculosis Association will preside at the morning meeting.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Heart trouble was the leading cause of death in North Carolina in 1940, claiming approximately one person out of every six of the 32,194 for whom death certificates were filed with the State Board of Health, or a total of 5,451, with a rate of 153 per 100,000 population, compared with 1,780 in 1914, the first year of registration, when the rate was 74.4, less than one-half of what it was for the year recently ended.

For many years tuberculosis was the No. 1 cause of death in this State, but that now ranks eighth, while heart diseases continue to maintain a firm first, year after year.

Pneumonia deaths last year totaled 2,041, with a rate of 57.1, compared with 100.5 in 1914. As late as 1936 the rate was 93.7; by 1938 it had dropped to 77.7, and in 1939 it was 59.5.

There was a noticeable increase in deaths from preventable accidents in 1940, when these totaled 1,535, compared with 1,481 the previous year. "These and deaths from preventable and controllable diseases add unnecessarily to our death rate," Dr. Reynolds pointed out, "and it would be unfair to attribute them to unhealthful conditions, as each one represents a mistake or negligence somewhere."

"As to diphtheria, while deaths from this preventable disease are on the decline, the rate having fallen from 15.8 in 1914 to 3.3 in 1940, and while we have a compulsory immunization law with which the public ought to be familiar by this time, the responsibility, in the last analysis, is a moral and not a legal one and rests with parents."

The number of deaths from pellagra, a disease attributable to nutritional deficiencies, was 169 in 1940, compared with 209 the previous year, which brought the rate within a single year down from 5.9 to 4.7. In 1914 it was 23.6; by 1936 it had dropped to 10.3, and as late as 1938 it was 7.3.

The vital statistics report for 1940, prepared un-

der the direction of Dr. R. T. Stimpson, shows there were 80,971 births in North Carolina, compared with 78,957 in 1939, the rate having risen from 22.3 to 22.7 for this period.

The infant mortality rate fell from 59.1 to 56.3, but the maternal death rate rose from 5.0 to 5.3. However, this problem is being vigorously attacked by the Board of Health's Division of Preventive Medicine, of which Dr. George M. Cooper, Assistant State Health Officer, is the Director, through the operation of nearly 200 maternity and infancy clinics and the establishment of two professorships at the School of Public Health at the University of North Carolina and at Duke University. Dr. A. W. Makepeace, obstetrician, and Dr. Robert B. Lawson, pediatrician, already are helping to train workers.

The death rate from tuberculosis in 1940, which was 49.9, as compared with 51.3 the previous year and 139.3 in 1914, continued its downward trend, while there was a decided decrease in the number of deaths from diarrhea and enteritis among children under two years old. In 1940 there were 500 of these infant deaths, compared with 666 in 1939, while the rate in a single year fell from 18.8 to 14.0. In 1914 it was 81.2, and as late as 1938 it was 29.2. The toll from this infantile disease is heaviest during the summer months.

The total death rate from all causes last year was 9.0.

* * *

In the March issue of *The Health Bulletin*, Dr. D. F. Milan reported on the nutritional survey made in Chatham county last year. The following extracts are taken from this article:

"If all the adult records are put together and averaged for the unit of a single individual, a generalized picture for the community as a whole can be assumed. Such a procedure shows that Chatham community has a caloric intake of about 2,000 calories per individual per day and that the portion of this that is made up of carbohydrates is low and the percentage of fat high (41%). The protein intake (meat, milk, etc.) is just on the borderline of normal (55 grams). However, the vitamin B₁ intake, which vitamin is found in the same foods as protein, is only about 60 per cent of the recommended level. When this vitamin is low there is a tendency to decrease carbohydrates and increase fats, as has occurred here. A diet too high in fats is less digestible.

"Riboflavin is a vitamin found at its highest percentage in milk and milk products, turnip and mustard greens, peanuts, liver, and to a lesser extent in many other foods. The riboflavin intake of this community is about one half to two thirds of the recommended level. About this same percentage of normal intake fits the two needed mineral elements, calcium and iron. The vitamin A intake is slightly below the recommended level."

CORRECTION

In the February issue of the *North Carolina Medical Journal*, a mistake appeared in the news notes from the State Board of Health. A correction should be made in the following sentence from Mr. John D. Faulkner's radio address, "Rats and Their Relation to Disease": "In the past ten years over 13,000 cases have been reported to the State Board of Health during this period, with the majority of cases occurring in the past four years." This sentence should read: "In the past ten years over 13,000 cases have been reported and the number of cases reported each year is increasing. In North Carolina, 564 cases and 46 deaths have been reported to the State Board of Health during this period, with the majority of cases occurring in the past four years."

AMERICAN ACADEMY OF PEDIATRICS

Region Two of the American Academy of Pediatrics will meet at the John Marshall Hotel in Richmond, Virginia, April 24 and 25. Any physician interested in children is invited to attend. The following program will be presented:

PROGRAM

Thursday, April 24, 1941

- 9:00-10:00 a. m. Registration.
 10:00 a. m. Round Table Discussion.
 Mental Health of the Child as Related to National Defense.
 Chairman: Dr. Horton Casparis, Professor of Pediatrics, School of Medicine, Vanderbilt University.
 Co-Chairman: Dr. Harvie DeJarnette Coghill, Director, Children's Memorial Clinic and Assistant Professor of Pediatrics and Neuropsychiatry, Medical College of Virginia.
 12:30-2:00 p. m. Luncheon.
 2:00-4:30 p. m. Round Table Discussion.
 Nutrition of the Child as Related to National Defense.
 Chairman: Dr. Frederick F. Tisdall, Associate Professor of Pediatrics, University of Toronto.
 Co-Chairman: Dr. W. H. Sebrell, Chief, Division of Chemotherapy, National Institute of Health.
 6:00 p. m. Cocktail Hour.
 7:00 p. m. Dinner.

Friday, April 25, 1941

- 9:00-10:00 a. m. Food Contaminations and Poisons.
 Dr. George Marshall Lyon, Huntington, W. Va.
 10:00 a. m. Round Table Discussion.
 Communicable Diseases and Their Relations to the Child During National Defense.
 Chairman: Dr. Wilburt C. Davison, Professor of Pediatrics, and Dean, School of Medicine, Duke University.
 Co-Chairman: Dr. M. Hines Roberts, Professor of Pediatrics, School of Medicine, Emory University.
 12:30-2:00 p. m. Luncheon.
 2:00 p. m. Business Meeting.

NORTH CAROLINA NEUROPSYCHIATRIC ASSOCIATION

The North Carolina Neuropsychiatric Association met at Duke Hospital at 2 p. m. on March 28. The following program was presented:

- 2:00-2:45—Inspection of the new out-patient and in-patient psychiatric clinics, Duke Hospital. Demonstrations of electroencephalography.
 2:45-3:15—(Amphitheatre) Dr. Hans Loewenbach: "The Technique, Interpretations and Value of Electroencephalography."
 3:15-3:45—Dr. Edward Stainbrook: "Some Observations on the Value and Significance of the Rorschach Tests."
 3:45-4:30—Dr. W. P. Beckman, of the Columbia, S. C., State Hospital: "Problems and Progress in Mental Hygiene in South Carolina."
 4:30-5:30—Dr. Walter Freeman, of Washington, D. C.: "Indications, Procedures and Results in Prefrontal Lobotomies."
 5:30-6:00—Business meeting of members.
 6:00—Collation or "tea" at Dr. Crispell's home.

Officers of the Society are Dr. Mark A. Griffin, Asheville, President; Dr. Archie A. Barron, Charlotte, Vice President; Dr. Malcolm D. Kemp, Pinebluff, Secretary-Treasurer.

LECTURES ON INFANTILE PARALYSIS

In April a series of six lectures on Infantile Paralysis by outstanding medical authorities will be presented at Vanderbilt University, Nashville, Tennessee. These lectures are sponsored by the National Foundation for Infantile Paralysis.

Dr. Ernest W. Goodpasture, head of the Department of Pathology at Vanderbilt, is supervising the arrangements.

The schedule as arranged by Dr. Goodpasture is as follows:

- April 7, Monday—The History of Poliomyelitis (Progress of the knowledge of the disease up to the present)
 Dr. Paul F. Clark, Professor of Bacteriology, University of Wisconsin School of Medicine.
 April 8, Tuesday—The Etiology of Poliomyelitis (Including its relation to diagnosis)
 Dr. Charles Armstrong, Senior Surgeon, U. S. Public Health Service.
 April 9, Wednesday—Immunity to Poliomyelitis (Including Serum, Therapy and Vaccination)
 Dr. Thomas M. Rivers, Director, Hospital of the Rockefeller Institute for Medical Research.
 April 14, Monday—Pathology and Pathogenesis of Poliomyelitis
 Dr. Ernest W. Goodpasture, Professor of Pathology, Vanderbilt University School of Medicine.
 April 15, Tuesday—Epidemiology of Poliomyelitis
 Dr. John R. Paul, Yale University School of Medicine.
 April 16, Wednesday—Treatment and Rehabilitation of Poliomyelitis Patients
 Dr. Frank Ober, Assistant Dean, Harvard University Medical School.

The lectures will be held in the amphitheatre of the Vanderbilt Medical School at 8 o'clock each evening, and are open to all interested persons.

CATAWBA VALLEY MEDICAL SOCIETY

The Catawba Valley Medical Society conducted a program on Pathology at the March 12 meeting in Lenoir. A number of the state's leading pathologists participated in a new type of program.

1. "Glossitis" by Dr. L. M. Caldwell, Newton.
2. "Virus: A Review of Our Present Knowledge," by Dr. Alfred Blumberg, Asheville. Discussion by Dr. J. B. Bullitt of Chapel Hill.
3. "Plasma Transfusions," by Dr. Paul Kimmelstiel, Charlotte. Discussion by Dr. T. H. Byrnes, Charlotte.
4. Case Reports.
5. A medical question and answer "Dr. Quiz" feature, in which the members of the society acted the role of "Dr. Quiz" and the visiting pathologists the roles of the question answerers.

BUNCOMBE COUNTY MEDICAL SOCIETY

At the first monthly meeting of the Buncombe County Medical Society, held on March 3, Dr. Edwin J. Chapman talked on "Cancer of the Larynx". On March 17, Dr. Morris Fishbein, Editor of the *Journal of the American Medical Association*, was the guest speaker at the Executives' Club Dinner, held at the George Vanderbilt Hotel. Dr. Fishbein's subject was "Socialized Medicine".

FORSYTH COUNTY MEDICAL SOCIETY

On March 11 the Forsyth County Medical Society, meeting at the Robert E. Lee Hotel in Winston-Salem, held a Symposium on Influenza. Speakers were Dr. W. deK. Wylie, who discussed influenza from the standpoint of diagnosis; Dr. C. A. Street, who gave the pediatrician's viewpoint; Dr. J. A. Harrill, who discussed nose and throat complications; and Dr. E. A. MacMillan, who spoke on the nervous and mental manifestations.

GUILFORD COUNTY MEDICAL SOCIETY

The Guilford County Medical Society met at the Sheraton Hotel in High Point, March 6, at 6:30 p. m. Dr. John A. Kolmer, Professor of Medicine in charge of Bacteriology and Immunology at Temple University Medical School, gave an address on "The Present Status of Active Immunization Against Disease".

MECKLENBURG COUNTY MEDICAL SOCIETY

Dr. Oren Moore and Dr. W. Z. Bradford were the speakers at the first monthly meeting of the Mecklenburg County Medical Society, held on March 4. Dr. Moore spoke on "The Management of Prolonged Labor", and Dr. Bradford's subject was "A Comparative Study of the Complications of Pregnancy in the White and Colored Races, As Observed in 2000 Consecutive Pregnancies". On March 18 Dr. William Allan spoke on "Problems in Heredity", Dr. Tom W. Baker gave a paper on "The Mechanism of Cardiac Pain and Its Differentiation From Chest Pains of Radicular Origin", and Dr. Joseph Elliott gave a discussion of the "Diagnosis of Skin Disease", with kodachrome demonstrations. A technicolor film on "Gonadotropic Hormones" was shown, with talkie remarks by Dr. S. L. Seigler, New York City.

COURSE IN TROPICAL MEDICINE

The Department of Medicine of the New York Post-Graduate Medical School offers a five day course in Recent Advances in Tropical Medicine, May 19 to 23. The course will be under the direction of Dr. Z. Bercovitz. Applications should be addressed to The Director, 309 East 20th Street, New York City.

AMERICAN MEDICAL GOLFING ASSOCIATION

The American Medical Golfing Association will hold its twenty-seventh annual tournament at Cleveland Country Club and Pepper Pike Club in Cleveland, Ohio, on Monday, June 2, 1941. Members may tee off from 7:30 a. m. to 2 p. m. Thirty-six holes of golf will be played in competition for the fifty trophies and prizes in the eight events.

All male Fellows of the American Medical Association are eligible and cordially invited to become members of the AMGA. Write Executive Secretary Bill Burns, 2020 Olds Tower, Lansing, Mich., for application blank. Participants in the AMGA tournament are required to present their home club handicap, signed by the club secretary, at the first tee on the day of play. No handicap over 30 is allowed. Only active Fellows of the AMGA may compete for prizes. No trophy is awarded a Fellow who is absent from the annual dinner, which is always worthwhile waiting for!

UNITED STATES CIVIL SERVICE EXAMINATIONS

SENIOR MEDICAL OFFICER, \$4,600 A YEAR
MEDICAL OFFICER, \$3,800 A YEAR
ASSOCIATE MEDICAL OFFICER, \$3,200 A YEAR

Public Health Service, Federal Security Agency
Food and Drug Administration, Federal Security Agency, Veterans' Administration

Civil Aeronautics Administration, Department of Commerce

Indian Service, Department of the Interior

Applications must be filed with the United States Civil Service Commission, Washington, D. C. They will be rated as received and certification made as the needs of the service require. When sufficient eligibles are obtained, the receipt of applications will be closed, in which case due notice will be given.

A subsequent application will not be accepted from any applicant within three months of the date of receipt of his preceding application under this announcement.

When an applicant who has been rated eligible in this examination for any of the grades listed above files a subsequent application, but is found ineligible for a higher grade than that for which he has been rated, his application will be canceled and no additional rating will be assigned him in the grade for which he is already eligible.

* * *

The United States Civil Service Commission hereby amends Announcement No. 101 to include the options indicated under the following grades:

Senior Medical Officer

Option 4. Public Health (General)

Medical Officer

Associate Medical Officer

Option 15. Diagnosis and Treatment of Cancer

Further information regarding the examination is contained in the original announcement.

This amendment replaces the previous amendment. Issued: March 24, 1941.

NEWS NOTES

Dr. Hartwell Cocke of Asheville gave a lecture on intestinal tuberculosis during the post-graduate course conducted by the American College of Physicians at the Mayo Clinic, February 21.

* * *

Dr. Oren Moore of Charlotte has recently been made President-Elect of the South Atlantic Association of Obstetricians and Gynecologists. Dr. W. B. Bradford of Charlotte was placed on the North Carolina State Board of the association.

* * *

Dr. Wilmer Grantham of Asheville spoke at the annual meeting of the Southeastern Section of the Urological Association in Jacksonville, Florida, February 21.

* * *

An article by Dr. John Dougherty of Asheville, entitled "Venography, a Clinical Study", was published in *Surgery, Gynecology and Obstetrics*, December, 1940.

* * *

Dr. William Allan of Charlotte spoke before the Greenville (South Carolina) County Medical Association on February 3. His subject was "Problems in Heredity".

An article entitled "Effect of Fear on Diagnosis", by Dr. J. P. U. McLeod of Marshville and Dr. J. D. Highsmith of Fayetteville, appeared in the *Medical Record* for January 1.

* * *

Dr. Howard M. Starling of Winston-Salem has been certified by the American Board of Surgery.

* * *

Dr. Harry Winkler of Charlotte has been certified by the American Board of Orthopedic Surgery.

* * *

Dr. James F. Marshall of Winston-Salem has been certified by the American Board of Surgery.

WOMAN'S AUXILIARY

ATTENTION LADIES

District Councillors and Secretaries, please rush your 1940-'41 dues to Mrs. E. C. Judd, Raleigh, N. C. The dues must go in at once in order to get credit with the A. M. A.

A MESSAGE FROM THE PRESIDENT

The Spring Board meeting was held at the home of the president, Mrs. Clyde R. Hedrick of Lenoir, on April 4. Reports of the year's work were made by all the officers, and plans for the state meeting were made. We will be honored this year with an address by Mrs. V. E. Holcombe, President of the Auxiliary to the A. M. A. I am sure that her presence will be an inspiration to us all, and our meeting at Pinehurst should be well attended. Plan now to attend the state meeting with your husband.

AN APPEAL FOR HELP FOR THE ORGANIZATION OF MEDICAL AUXILIARY IN NORTH CAROLINA

Dear Doctors' Wives:

This letter to you is somewhat delayed, owing to a hospital experience. But now that I am rapidly convalescing, I do want to get in touch with you at once because I need some information very badly, and need it quickly.

I am very anxious to find out two things.

- I. How many medical auxiliaries and district organizations there are in the state.
- II. Where we can organize new auxiliaries and who will help me organize the new auxiliaries.

Therefore, I am addressing this letter to the councillors in the state, and also to the organized auxiliaries and to every interested doctor's wife in the state.

Will you please help me get at once the names and addresses of each officer of each auxiliary and district? Write this information on a postal card and send it to Mrs. C. F. Strosnider, Box 245, Goldsboro, N. C.

May I also ask you to send me immediately the following information, which I must have for my state and national report.

1. Number of auxiliary meetings held.
2. Number of meetings held by the auxiliary for lay organizations.
3. Average attendance at each meeting.
4. Number of eligible doctors' wives in the district. (*Eligible* means wives whose husbands are members of the county medical society).
5. What type of work has your auxiliary done this year?
6. What key positions do doctors' wives hold in your district?

This information is very important if our state is to make a good showing in our national report. So I appeal to you please to send it to me. If you can't secure all the information, send me what you can of the six headings I have requested.

As time goes on, and national conditions become more complicated, the greater is the need for a well organized auxiliary to the Medical Society of the State of North Carolina. I do hope there will be many new auxiliaries formed this year.

How many can we organize in your district?

Can I be of any service in helping to organize an auxiliary in your district?

I have some very good pamphlets on organization sent me by Mrs. Allen, National Organization Chairman. These pamphlets tell in detail how to organize auxiliaries. Please let me know if you would like for me to send you some of these pamphlets, and call upon me if I can be of any service.

Let's organize!

As doctors' wives, it is not only our privilege to do this, but it is our duty and responsibility to help, in any way possible, to carry on the great work of our husbands.

Hoping you will send me the requested information, and organize your locality, I am

Very sincerely,

ANNA L. STROSNIDER,

Organization Chairman.

MRS. C. F. STROSNIDER,
Box 245
Goldsboro, N. C.

NOTICE

Only a few more weeks and the members of the Woman's Auxiliary to the American Medical Association will be arriving in Cleveland for their Annual Convention, June 2-6. Have you made your reservations? If not, send your request, *at once*, to Dr. Edward F. Kieger, Chairman of Committee on Hotels and Housing, 1604 Terminal Tower Building, Cleveland.

In Memoriam

DR. T. W. M. LONG

At its regular monthly meeting of March, the Forsyth County Medical Society adopted the following resolutions:

WHEREAS a beloved friend and fellow worker, Dr. T. W. M. Long, has been forever taken from our midst,

BE IT RESOLVED: That the members of the Forsyth County Medical Society express their sincere regrets at his loss and extend to his family their deep sympathy.

The Society is mindful of the untiring efforts and the extensive services which Dr. Long gave in behalf of his profession. The Society is also conscious of the great benefits shared by every doctor in North Carolina, resulting from these activities. They have been so enumerated through the press and observed personally that it would be superfluous to mention them here.

The Society wishes to recognize these inestimable values, and to extend its most sincere condolence to the family. In Dr. Long's untimely death the medical profession of North Carolina has suffered a great loss.

BE IT RESOLVED further, that a copy of these resolutions be sent to the family of the deceased, to the North Carolina Medical Journal and be incorporated in the minutes of the Forsyth County Medical Society.

Signed by the Committee:

G. Carlyle Cooke, M.D.
C. H. Mauzy, M.D.
A. deT. Valk, M.D.
J. B. Whittington, M.D.
Wortham Wyatt, M.D.

The Versatility of Genius.—The guidance of gifted children is made more difficult by their versatility. Intellect by its very nature is highly general, and it follows that to one who is intellectually superior many fields of achievement are possible if the requisite interests and drives are present. The versatility of a few geniuses has received considerable attention, but the less spectacular cases are overlooked. People like to believe that the genius as a rule is no better than the rest of us except in one particular. The facts are very different. Except in music and the arts, which draw heavily on specialized abilities, there are few persons who have achieved great eminence in one field without displaying more than average ability in one or more other fields.—Lewis M. Terman: *Psychological Approaches to the Biography of Genius*, Science, 92: 297 (October 4) 1940.

BOOK REVIEWS

Principles of Hematology. By Russell L. Haden, M.A., M.D., Chief of the Medical Division of the Cleveland Clinic, Cleveland, Ohio. Second edition, thoroughly revised. Price, \$4.50. Pp. 362, with 104 illustrative cases, 167 illustrations including 173 original photomicrographs, and 100 original charts and drawings. Philadelphia: Lea & Febiger, 1940.

The second edition, following so rapidly on the first edition, is a good indication of the worth of this book. It is written with the aim of simplifying the study of disorders of the blood, and it succeeds very well. The author has accomplished this simplification by thoroughly stressing the fundamental principles on which the variations of the blood depend, rather than by being sketchy and incomplete. The book is especially well illustrated. The series of charts illustrating the mechanism of anemia, polycythemia, leukocytosis, and leukopenia serves to present the essential pathology in a clear, forceful and easily understood manner. The large number of photomicrographs of the blood cells are unusually good—much better than the vast majority of drawings usually seen. The large number of cases representing the various types of blood dyscrasias are particularly valuable. The most valuable laboratory procedures are well presented. Unusual and difficult technical methods such as supravital staining and puncture of the bone marrow have not been included because of the special skill and experience that are required. Likewise unusual variations in the blood cells and rare blood dyscrasias have not been discussed. These conditions still puzzle experienced students of the blood and are beyond the ability of the average physician. To the second edition have been added a discussion of the role of Vitamin K, and several technical methods which were omitted in the first edition.

Electrocardiography in Practice. By Ashton Graybiel, M.D., Instructor in Medicine, Courses for Graduates, Harvard Medical School; Research Associate, Fatigue Laboratory, Harvard University; Assistant in Medicine, Massachusetts General Hospital; and Paul D. White, M.D., Lecturer in Medicine, Harvard Medical School; Physician, Massachusetts General Hospital, in charge of the Cardiac Clinics and Laboratory. Cloth. Price, \$6.00. 319 pages with 272 illustrations. Philadelphia and London: W. B. Saunders Company, 1941.

This book, after a brief but clear introductory discussion of the principles and technique of electrocardiography, gives in detail every disorder of the heart, with large reproductions of actual electrocardiograms. These are grouped in logical order, and only actual cases are presented. The book can be highly recommended to anyone who wishes to learn how to apply the electrocardiograph to actual clinical practice.

Management of Fever. — The important indications to keep in mind in the management of fever are: first, physical and mental rest; second, adequate quantities of water; third, more or less adequate caloric intake; fourth, hydrotherapy; and fifth, restoration of vitamins.—Walter L. Niles, in a Conference on the Management of Fever, New York State Journal of Medicine, 40:1741 (December 1) 1940.

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VOL. 2

MAY, 1941

No. 5

THE MEDICAL CITIZEN OF 1941

NATHAN B. VAN ETEN, M. D.

NEW YORK CITY

At Winston-Salem in North Carolina on the sixteenth of April, 1941, the corner stone of a new building dedicated to medical education will be well and truly laid.

This corner stone is just another member of a foundation which it is hoped will be strong enough to support its share of the weight of a civilized American structure.

This new building with all of its modern ideas designed to facilitate the instruction of students of medicine will be valuable in proportion to the ability and devotion of its faculty to develop physicians who will possess not only adequate knowledge, but a spirit of service as medical citizens.

Institutions of learning are valuable to our American society in proportion to the strength of their effort to build up intelligent loyalties to American ideals.

Too many physicians are, in a sense, cloistered within their own professional lives. Too few are active participants in civic life.

America has greater need for medical citizens today than at any time in our history. She needs people who are educated in the techniques of the sciences of biology, of medicine, and of sociology. She needs citizens who will look to the future while standing upon the solid fundamentals which are the underlying strength of our civilization.

She needs citizens who will be strong enough to combat ideologists who are aiming at her destruction by revolution.

In April, 1941, we are at the beginning of a great struggle abroad with organized

autocracies, and at home with organized revolutionists, a few of whom, I regret to say, are within the ranks of the medical profession.

Some of these physicians have openly expressed the thought that our social structure must be completely leveled and completely rebuilt after the Russian pattern, before we can hope for liberty and justice and world wide peace.

Apparently no one can find a place where there is less freedom, less justice, and less prospect of peace than in Soviet Russia.

Much of the unrest may be due to the fact that the issues are obscured, while our government waits for the force of public opinion to push it into the path it would like to follow or already means to follow.

Medical citizens have expressed the wish to serve the country if and when they are needed, but are becoming impatient of uncertainty.

Is America in war? Or is America merely building material for sale or exchange? Is the mobilization of a million men just for exercise or has it a definite objective abroad or at home?

Thousands of medical citizens who are lukewarm about going to training camps would be eager to play their parts in a real national emergency. They want to know what mobilization of men and material really means.

The medical citizen of 1941 faces a difficult future. If the country goes to war, more than forty thousand physicians will be needed in our armed forces. This will seriously affect the public services they now carry on.

They are not like ordinary trainees, because most of them are in active work; they may lose their places in their medical progress, and at the end of a war return to vanished opportunities. Whatever happens a great mobilization is in progress. Armies at home or armies abroad must have medical care, and many worthwhile careers will be dislocated.

The education of the successors of these physicians of 1941 must be given serious consideration.

What shall be the content of their education to fit them for the best service to the nation?

What will your school do about it? The civilian population will need good physicians. Will you think of the small towns as well as the big towns? Will you train soldiers or civilians or both? Will you try to teach loyalty to America's future or will you be indifferent to moral quality? Will you try to send into the new America the good citizens she needs, or will you think that you have discharged your duty if you confine your teaching to professional techniques? Will you lend the weight of your influence to mobilizing public opinion and to bringing order out of confusion?

Common ground must be found where isolationists, pacifists, nationalists and internationalists and all other patriots may exercise their loyalties in support of the best interests of our country. The functions of the medical citizen need to be carefully integrated with all efforts to preserve and to restore the morale as well as the physical health of all our people.

The American Medical Association has played the leading role in nearly a century of medical progress. Its history records year by year the constant modernizing of scientific thought in America.

The moderns of 1841 were just as up-to-date as you are in 1941. They immersed themselves in new problems and emerged advocates of new science, even as you are today studying with amazement the evolution of a new chemotherapy.

Our modern schools are engaged upon an educational experiment which will never be finished. None of us can practice the kind of medicine we were taught twenty, thirty, forty or fifty years ago. In our undergraduate days we were compelled to absorb more required education than was given to any other profession, and yet, most of the good

medicine of fifty years ago now has merely an historical interest.

No one questions the sincerity of the schools in their effort to prepare the student to practice his profession, but one may believe that the schools attempt to crowd so much into the undergraduate that only the exceptional student can digest his over feeding.

Four years is not long enough to teach all of medicine, nor is a lifetime.

The doctor of medicine must study as long as he lives. When the student comes to his internship he quickly realizes that applying his knowledge to the patient problem is a plunge into deep water.

I am inclined to believe that one of our country's greatest needs is good average practitioners of clinical medicine to take care of average patients.

Most of the teachers in the schools are themselves specialists, and if they are sufficiently luminous, they inspire their students to follow their example. Consequently many of our young interns have already hitched their wagons to stars before they come to the hospital and seem uninterested in the general clinical procession found in rotating services. Some of them try to cut short their hospital stay in order to go into special fields.

I would like to see educators work out the problem so that medical study should begin at least two years earlier than it does now, and so that it should furnish four years of clinical work, as a good education in internal medicine, obstetrics, traumatic, minor surgery, physical therapy and some basic instruction in the application of preventive medicine to the needs of the public health.

I would like to see all specialty teaching postponed until it is demanded by the graduate student. This, of course, would involve the creation of graduate medical schools in our universities.

In the interest of continuing and refreshing education for all practicing physicians, I would like to see our medical schools carry on extension courses in cooperation with organized medicine.

Reading papers on scientific subjects before medical societies is not enough. A few physicians may be able to return to their schools for graduate work, but most of them are unable to do this, and much needed education must be carried to them.

Individuals from medical faculties do go to other towns now, but I believe that much would be gained by cooperative planning by the schools and the medical societies.

Every practitioner in the land should be interested in post graduate work. In the state of New York forty courses a year are now being given by county medical societies.

In some places "teaching days" are promoted which are often attended by more than a hundred physicians. An expert is invited to meet a group in the afternoon when illustrative patients are assembled. A clinic is held, and then the group goes to dinner, where the discussion is continued on a question and answer plan.

Some of the universities are taking this idea very seriously.

A Regional Maternal Welfare Teaching Day was held at Syracuse on April 3 under the auspices of Syracuse University, the Obstetric Society of Syracuse Hospital, The Division of Maternity, Infancy and Child Hygiene of the New York State Health Department, and the Medical Society of the State of New York. Another Maternal Welfare Teaching Day was held at Rochester on April 9 at the University of Rochester Medical School and the Rochester Academy of Medicine.

These programs were arranged by the Committee on Graduate Education of the State Medical Society and were well attended.

Teaching through scientific exhibits is increasingly popular. The exhibit of scientific material at the annual meetings of the American Medical Association is so remarkably stimulating that the old system of formal papers seems doomed to disappear.

I believe that the development of these forms of graduate education points the way to desirable changes in our entire educational system—when practical clinical work shall prepare young and old for the realities of their professional and civil lives.

I presume that a few of you are dreaming of the future of medicine, but most of you are concentrating upon the best solution of your immediate clinical problems.

Unfortunately you must be acutely conscious now that you must do a good deal of altruistic thinking, that you must look out of the windows of your laboratories and your consulting rooms into the fields beyond if the world is not only to be made a better

place to live in, but to be rescued from real perils which threaten to destroy our happy civil privileges of thought and speech and action.

Hard labor, hard study and sometimes inspired leadership have carried American Medicine to the supreme place among the health services of the world.

Retrospectively, the story of American Medicine is full of successive triumphs over stumbling ignorance as our pioneers searched for new frontiers of science.

The romance of the doctor as he progressed from empiricism to scientific controls and from the saddlebag to the automobile is a thrilling story of devotion to idealism.

The last fifty years is the inclusive period of so called modern medicine. Modern medicine is the end result of the evolution of individual efforts to cure the sick, to restore them to functional usefulness, and to enlist community support in the prevention of disease.

Forty years ago improving statistics and faith in modern methods inspired Herman Biggs to say that "Public Health is purchasable. A community can, within certain limits, determine its own death rate."

You all know how amply the Biggs dictum is justified today.

On March 5 in New York City the Seventy-fifth Anniversary of the founding of the City Health Department was celebrated.

Infant mortality was 250 per 1000 live births in 1866 and was 34 in 1940. Diphtheria claimed 3000 New York City victims annually in 1866, but last year only 10 children died from this disease.

The death rate from tuberculosis in upstate New York has been cut in half since 1920, when it was 74.6 per 100,000 of population. It was 36.3 in 1940.

Similar statistics are reported from many sections of the United States, and especially from places where there is intelligent concert of action between practicing physicians and local health officials.

Organized medicine has made marvelous contributions, in coordinating the efforts of individuals, in encouraging them by helpful recognition, and in supporting high standards of ethical practice which have been of the greatest importance to the general public in protecting them from swindling quacks and stupid incompetents.

Exemplary individuals have always in-

spired imitation. Outstanding genius has always had its followers, but organization has always been necessary to direct the freedom of fraternity along the roads which lead toward the greatest good to the greatest number.

Individual physicians accepted regulation, by accepting the rulings of the county medical societies. The county societies merged their idealism with that of the state medical societies, which in turn formed the great federacy which is the American Medical Association, with a membership of 118,000 physicians.

It was a natural desire of these members that every function should work as efficiently as possible, and that its motivation should be inspired by the highest ideals and implemented by the best educational equipment; medical schools therefore, were encouraged to step up their curricula to the best of the world's standards.

This has been done, and today medical education in America has no superiors.

It was a natural and necessary desire that the working tools and the work shops of the doctor should be developed into and maintained as effective instruments of public service, and so the hospitals were modernized and encouraged and humanized and charged with definite responsibility.

It was a natural desire of every physician to enjoy hospital privileges, but the necessity of giving only the best possible service to the community imposed limitations and developed graded and classified services, so that the patient could be guaranteed competent care.

The medical student is, therefore, trained to become an effective servant of the hospitalized sick—he lives for a year or more in a hospital as a cog in a public service machine—as well as a licensed practitioner with all the rights that he may be competent to use in the community.

The tempo of life during the last hundred years has not only changed our ideas of normal living, but has changed our vital statistics.

Life expectancy has changed from 21 years in 1835 to 62 years in 1940. I read that "Heart disease caused twice as many deaths in 1939 as any other disease." "Of the 1,387,897 deaths reported in 1939, 360,634 were caused by heart disease; 114,967 by cerebral hemorrhage; and accidental deaths totaled 92,623, of which 32,386 were

credited to the automobile."

During the last fifty years America became motorized and developed such exhausting speed that many failed in the struggle to keep up with a procession that endlessly tried to find new frontiers.

Life became so externalized by one scientific revelation after another that domestic and religious loyalties were often forgotten in the mad pursuit of new objectives that were undreamed fifty years ago.

Elusive ideals carried us through two wars without satisfaction, and now we have come to a time when all that we have cherished must be defended against destruction by disintegration or external attack.

It is obvious that a European civilization is falling to pieces and that a new social mosaic must appear. Whatever our sympathies we must prepare ourselves to play an important part in a new world order.

No one can accurately plot the future, but all Americans will be deeply concerned in the common cause of defending the nation and in promoting the security of the last and only surviving peaceful democracy.

We have seen that reversions from democracy to autocracy in Europe seem to have been caused by long disintegration of character, by subsidizing the discontented to gain their support of governmental control under the aegis of paternalism.

If we are wise we will apply these lessons to our own evolution, not only to the peculiar problems concerned with our cosmopolitan society, but to the development of the special fundamental social problems concerned with the protection of the physical, mental and moral health of our people.

We have come to a time when every health agency must be mobilized for national defense. In a time of national emergency we must watch our steps, lest we be lured into by-paths that may lead to a surrender of the practice of medicine to governmental control.

We must conserve everything that is good and at the same time push forward with objective planning.

Some of our clothes are out-moded. Thomas Jefferson said you cannot expect a grown man to wear the coat cut for him when a boy.

We must be careful not to let down our standards of medical education. The American people must be assured the best care we

can give them. The Committee on Medical Preparedness of the American Medical Association has been working for ten months to mobilize the medical profession for field and home service. It is unanimously of the opinion that no medical student should be inducted into service, that good pre-medical students should not be diverted from their ambitions, and that the flow of educated physicians should be maintained at the present rate.

Whether we shall continue to enjoy a modified peace, or shall become involved in active warfare, the program is planned for at least five years.

Unless medical teaching shall be continued, our medical service, both private and institutional, will soon be inadequate.

Hospitals are already losing interns faster than they can be replaced.

Let physicians take the leadership for which they are qualified; let them emerge from their conservative shells and demand sane and progressive programs which will assure a continued good medical service, and let them educate all the people in their own communities and ask their cooperation in developing sound programs for American Health.

In the spirit of such an ambition let us face the dark hour of the world crisis. However horrible the European fratricide which stirs our emotions so deeply, let us keep our eyes open and our ears alert to our own opportunities for patriotic service. Let us not bury our heads in the sand. Let no one lull us to sleep with stories of security. Let us rise to our common responsibility with renewed energy.

Away back in the era of Babylonian culture practitioners of healing arts were compelled to organize themselves for the protection of the people against the deceptions of charlatans and quacks. That was four thousand years ago. The need for rededication is upon us now.

The autocratic quackery of Hitler, Stalin and Mussolini must be resisted with all our strength.

Crystallizing American opinion into a determination to stop a Frankenstein would prevail because of the strength behind it.

Wishful thinking is feeble resistance. A Scotch minister prayed: "Oh, Lord, we pray thee to convert Hitler to the ways of civilized peace. If that cannot be, oh Lord, we pray thee to take him to thyself."

Two thousand years ago medical thought was crystallized into adherence to the Hippocratic Oath. Its cohesive altruism has survived the rise and fall of many civilizations, until today the ideal of devotion to the service of all mankind is stronger than ever. Although I believe that this is peculiarly true of the American medical profession, which is always giving freely of its scientific effort to salvage the sick, I fear that we must have somehow failed in our acceptance of our responsibility as citizens.

In the year 90 A.D. the Roman Empire extended from the English Channel to the Red Sea. A little man named Paul, 5 feet, 3 inches tall was a prisoner in Rome. He was a giant ferment which stimulated the growth of religious devotion into one of the potent forces which stopped the march of paganism. We need a Saint Paul today.

A new generation of people has grown up in Germany which has been so saturated with paganistic ideologies that they have thrown aside the inhibitions of all religions except the irreligious nihilism of force which they worship and deify as "Welt Macht". Ruthlessly they are now marching over the democracies of the world, destroying all who do not conform to the brutal demands of their insane leader.

Germany is no longer the mecca for advanced education; the masters were driven out by the lash of paganism, and medical education has lapsed below mediocrity. The medical course was cut to two years in 1939, and quacks and nature healers were legalized.

German scientists paralyzed by fear or starving in concentration camps, German youth hardened into determined machines concentrating upon a single objective, world domination—these present a picture all the patterns of which are painted a lurid red.

Norway, Holland, Belgium, France—all were betrayed by privileged visitors, masquerading as friendly workers. How many such inspired criminals do you think may be now undermining the British Empire?

The United States of America has already been invaded. Advance columns have exerted subversive influences in every part of our country, have sabotaged the mind of youth, and even boldly drilled in uniforms.

Many of you remember that these organized movements have been actively going on in this country for the last twenty-five years.

Some of you have personal knowledge of the effects of this quarter of a century of foreign propaganda.

It was reflected in the full approval of Hitler by an important retired American officer, and within a few weeks by the expression of a distinguished business man that he waits with impatience for an American dictator.

The ideals of popular government which were promoted by Washington, Jefferson and Lincoln are remembered only in political oratory. Petty dictators are already here. Our intelligentsia are lazily surrendering the domination of our great cities to organized gangsters. Shall we awake before it is too late?

It is very late to withdraw our hospitality from those foreign visitors who now enjoy the safety of asylum, but every effort should be made to convert them to an appreciation of the benefit of living in an advanced democracy. If these efforts fail, they should be returned to the sources from which they came.

The seismograph is recording the workings of agitators in the fields of labor and of education at every social level. Widening cracks are appearing in the surface of our economic, religious and social systems which may engulf our democracy.

Every potential leader of public opinion in the United States must be mobilized to defend our country against ideas which are destroying the values of our civilization.

All professionals—every physician, every dentist, every pharmacist, every lawyer, every clergyman, every teacher, every trained nurse, every trained thinker—must be enlisted in a continuous campaign of defense.

Defense against those forces which destroy our religions, our faith in God and in our fellowman, is vital to the preservation of the integrity of our national life.

A jury has returned a verdict of guilty against the American Medical Association for alleged violations of an Act to prevent restraints of trade.

The American Medical Association is an educational institution. It has never been in business and never in trade. Its aims are the promotion of medical education and the protection of the American people from the deception of incompetents and quacks.

The American Medical Association will

continue to try its case before the court of public opinion, and it will continue to try to serve the American people to the best of its ability long after the persecutors have passed from the scene.

The excellent health of the American people is largely the result of the efforts of the organized profession of medicine.

The physicians of America are fundamentally and earnestly patriotic, and I am confident that they will carry on the best of their traditions in their continued battle for the American way of life and the spirit of a free democracy.

I believe that the American Physician of 1941 is the best physician in the world. I hope that he will prove himself to be an effective citizen.

THE PERSONAL ELEMENT IN MEDICINE

THURMAN D. KITCHIN, M. D.

It has been said that "there are two enduring human needs, education and the relief of suffering."

We have just witnessed the symbolic cementing of the resources for meeting these needs under one roof. Philanthropy and science will furnish the dynamics to enable this institution to pulsate with the health-giving properties of modern medicine and to throb with the life blood of learning.

But there is a tripod supporting man's welfare. These two—relieving suffering and training the mind—are incomplete. There is a third essential—the great values of the unseen and unheard truths of the spiritual world.

Three sinister evils impede man's upward progress and compromise his well being—sin in the soul, ignorance in the mind, and disease in the body. The full Gospel of Christ means to save both soul and body of man. It is our desire that here may be used the Church, the School, and the Hospital as mediums through which we attempt to follow the example of our Lord in preaching, teaching, and healing.

I have profound reverence for scientific knowledge and am sure that this side of our institutional life will be adequately de-

Talk made at the laying of the corner stone of the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, April 16, 1941.

veloped and advanced through careful research.

I want now to place emphasis on the personal element in this institution's contribution to human welfare.

Is it too much to hope that in this institution, made possible through the generosity of friends and conducted under the auspices of a Christian school, the ice-cold rigidity of the science of medicine may thaw a little so that the patient himself, who is afflicted, may be considered as well as the disease? In other words, that the patients admitted to this hospital will be regarded as personalities and not merely as cases? In this way, the austerity of science will be blended with the sympathetic art of medicine, with no compromise of either.

I have sometimes thought that doctors have been so busy diagnosing and treating and preventing disease that the individual harboring the disease has almost been forgotten. Of course, it is presupposed that doctors should know all that is known about the scientific side of medicine, the latest in diagnosis and in treatment; but even this is not enough, since the reason for any of it to be done at all was, is, and always will be the patient. Undoubtedly we have in our scientific studies strengthened the tangible things in diagnosis and treatment. We must guard against the danger that the intangible—that is, the human element—may be lost. With the test tube in one hand and the microscope in the other, we have no hand left for the patient. We must develop an imaginary third hand. Without weakening either the test tube or the microscope hand, this emanation from the heart, from the spirit, may help the patient to keep up his courage and fight his way on. In our praiseworthy passion for research and for the application of new discoveries in medicine, let us never lose sight of the *personality* of the patient, the spark animating the clay.

Today much of the intelligence of the world and the inventive genius of man is dedicated to death and destruction. It is heartening to see rise here an institution that is dedicated to the healing of humanity's hurt. Here the art of administering to the sick, and the research into the hidden mysteries of disease will go hand in hand.

Let us cry "All good things

Are ours, nor soul helps flesh more, now,
than flesh helps soul!"

—Browning.

MODERN TREATMENT OF PNEUMONIA

HARRISON F. FLIPPIN, M. D.

PHILADELPHIA, PA.

The term pneumonia has been used for many years to designate an acute inflammatory process involving the parenchyma of the lung. In most instances the disease is caused by specific infectious agents, although it may result from non-infectious causes. In the past, clinicians and pathologists classified pneumonia according to its anatomical forms, but for purposes of specific treatment and prognosis, we now employ a bacteriological classification. Since the great majority (92 per cent) of pneumonias are caused by the pneumococcus, we will limit this discussion to pneumococcal pneumonia.

The discovery of the effectiveness of sulfapyridine in pneumococcal infections reopened the entire field of chemotherapy in pneumonia. Since its introduction four years ago, numerous clinical reports^(1, 2, 3) have unquestionably established its therapeutic effectiveness, and there can be no doubt now that its use in pneumonia constitutes the greatest advance in the control of this disease. We have recently compiled from the literature over 2500 cases of typed pneumonia treated with sulfapyridine without serum. The mortality rate for this entire series was only 7.3 per cent. This figure is indeed impressive when we recall the former mortality rate of 25 to 30 per cent.

In addition to its proven therapeutic value, sulfapyridine therapy in pneumonia has certain other advantages: (1) It is readily accessible. (2) It is easily administered. (3) It can be had for a relatively low cost to the patient. (4) It possesses uniform potency. (5) It is useful in all types of pneumococcal pneumonia. (6) It markedly reduces the incidence of complications from the disease. It is generally recognized, however, that sulfapyridine is not an ideal drug because

Presented before the University of North Carolina Post-Graduate Course in Medicine, Raleigh, March 14, 1941. From the Committee for the Study of Pneumonia, Philadelphia General Hospital. Aided by a grant from the American Philosophical Society.

1. Evans, G. M., and Gaisford, W. F.: Treatment of Pneumonia with 2-(p-aminobenzenesulfonamido) pyridine, *Lancet*, 2:14, 1938.
2. Flippin, H. F., Lockwood, J. S., Pepper, D. S., and Schwartz, L.: Treatment of Pneumococcal Pneumonia with Sulfapyridine, *J. A. M. A.*, 112:529, 1939.
3. Graham, D., Warner, W. P., Dauphinae, J. A., and Dickson, R. C.: Treatment of Pneumococcal Pneumonia with Deganan, *Canad. M. A. J.*, 40:325, 1939.

of certain toxic reactions associated with its use.

In the fall of 1939 there became available another sulfonamide derivative, sulfathiazole, which has proved to be as effective in the treatment of pneumonia as is sulfapyridine, and at the same time to be less toxic. Our own clinical experience with sulfathiazole⁽⁴⁾, combined with the reports of others, leads us to believe that it is rapidly replacing sulfapyridine as the principal therapeutic reliance in pneumonia. The purpose of this paper is twofold: to discuss the use of sulfathiazole in pneumonia, and to present briefly our observations on a new sulfonamide compound, sulfadiazine.

Sulfathiazole

In a comparative study of the therapeutic effectiveness of sulfapyridine and sulfathiazole in pneumonia⁽⁵⁾, it was found that the effects of the two drugs on final mortality were approximately equal. Sulfathiazole did not bring about a critical fall in temperature within twenty-four hours as frequently as did sulfapyridine, but the number of drug-induced crises within forty-eight hours was similar for the two drugs. Likewise, a return to a normal temperature did not occur as rapidly with sulfathiazole as with sulfapyridine, but the average number of hospital days for the two therapeutic agents was the same—namely 13.4 days. Secondary rises in temperature with sulfathiazole appeared to occur less frequently than with sulfapyridine. The incidence of complications of pneumonia has been markedly reduced with the use of sulfapyridine, and comparable results have been obtained with sulfathiazole. This is most convincingly demonstrated by the low incidence (1.2 per cent) of empyema in patients receiving either drug.

Toxic Reactions: In general, the toxic effects of sulfathiazole are similar to those caused by sulfapyridine, but occur less frequently and with less severity. The most frequent toxic reactions from sulfathiazole are nausea and vomiting. As a rule they appear during the first twenty-four hours of therapy. However, the vomiting associated with sulfathiazole is usually mild and occurs in only 20 per cent of patients, as compared

to the more severe vomiting which accompanies sulfapyridine therapy in about 60 per cent of cases. Rarely does the vomiting in sulfathiazole treated patients become so severe as to necessitate stopping the drug. This advantage is of decided importance in the management of patients suffering from pneumonia. When vomiting is persistent it is advisable to replace water and chlorides by intravenous administration of saline solutions, in order to prevent hypochloremia and dehydration.

Toxic effects involving the urinary tract have constituted one of the most important complications of therapy with either sulfathiazole or sulfapyridine. Microscopic hematuria occurs in approximately 10 per cent of pneumonia patients receiving either drug. Gross hematuria, which is observed in 1 per cent of sulfapyridine treated cases, has been observed in only one of 500 cases treated by us with sulfathiazole. The associated microscopic hematuria is probably explained in part by the presence of urinary crystals composed of the acetylated fraction of either drug. Unless a considerable number of red blood cells are detected, or evidence of ureteral blockage is present, cautious treatment may be continued. Crystals of acetylsulfathiazole were frequently seen in the voided urine and were found at autopsy in the renal pelvis and tubules of one of our patients who died with endocarditis. Anuria, caused by sulfathiazole, has not been encountered by us, but we note rather frequently a transient reduction in urinary output during therapy. We feel that the possibility of serious renal damage from sulfathiazole must be borne in mind. If the urinary output tends to decrease markedly the patient should be given additional fluids, and if immediate return of renal function does not occur, the drug should be stopped.

Dermatitis occurs in about 3 per cent of pneumonia patients treated with sulfathiazole. These skin eruptions may be maculopapular, urticarial, or may simulate the clinical appearance of erythema nodosum and be associated with pain and tenderness of the joints. It is usual for fever to occur in conjunction with these drug rashes. Conjunctivitis, apparently caused by sulfathiazole therapy, is occasionally seen. The development of dermatitis or conjunctivitis necessitates the withdrawal of the drug.

The diagnosis of drug fever in pneumonia patients is a difficult one to make unless a

1. Flippin, H. F., and Lockwood, J. S.: Sulfathiazole and Sulfapyridine in the Treatment of Pneumococcal Pneumonia and Meningitis, *M. Clin. North Carolina*, 17:99, November, 1940.
5. Flippin, H. F., Reinhold, J. G., and Schwartz, L.: Sulfapyridine and Sulfathiazole Therapy in Pneumococcal Pneumonia, *J. A. M. A.*, 116:683, 1941.

skin rash accompanies the fever. We have encountered what we believe to be drug fever in about 3 per cent of patients. In the absence of other complications associated with pneumonia it is best to discontinue the drug for at least twenty-four hours, as the fever will usually subside within this time if it is due to the medication. Toxic psychosis caused by the drug is also a difficult diagnosis to make. About 4 per cent of our patients developed varying degrees of mental confusion which we attributed to the use of sulfathiazole. Since most of these patients were seriously ill we did not discontinue therapy until the infection was under control.

In the majority of patients the white blood cell count tends to drop during the first forty-eight hours of sulfathiazole treatment. White cell counts below 5000 are observed in about 3 per cent of patients, with the granulocytes falling below 50 per cent in only 0.5 per cent of cases. So far, in our experience, agranulocytosis has not been encountered. A progressive neutropenia demands daily blood studies, and if the patient's condition warrants it, the drug should be withdrawn. So far, this has not been necessary. The red cell count and hemoglobin likewise fall in a number of cases, but in view of the fact that pneumonia patients are frequently given extra fluids after admission in order to correct dehydration, it is difficult to evaluate this apparent secondary anemia. If the hemoglobin is below 60 per cent, blood transfusion may be given without stopping chemotherapy. Acute hemolytic anemia has not as yet been seen in patients treated with sulfathiazole, but should this complication occur the drug must be stopped and blood transfusion instituted immediately.

Hepatitis due to sulfathiazole medication has not yet been observed, although a number of pneumonia patients have clinical or subclinical jaundice on admission. The development of toxic hepatitis secondary to sulfonamide therapy demands immediate cessation of drug administration.

A review of these toxic manifestations indicates that the more severe toxic reactions, such as serious renal involvement, blood dyscrasias and dermatitis are infrequent with sulfathiazole therapy. However, the danger of severe toxic reactions increases with the prolonged use of the drug and is greater in patients with chronic organic

disease accompanying the acute infectious process. In the treatment of pneumonia we may expect a low incidence of severe toxic effects, as most patients require no more than 25 to 35 Gm. of the drug, extending over a period of approximately five days. However, when using sulfathiazole in diseases requiring treatment over a longer period of time, one may expect a greater incidence of serious toxic reactions.

Contraindications: In our experience the only possible contraindication to sulfathiazole treatment is a history of a previous sensitivity to sulfanilamide and its derivatives as manifested by drug fever, gross hematuria, dermatitis, hemolytic anemia, neutropenia, or jaundice. Even in spite of such a known sensitivity, it might be advisable, if the pneumonia is severe, to administer the drug and watch for toxic effects. The presence of jaundice, anemia, or leukopenia before treatment is started does not contraindicate drug therapy. We know of no medication which cannot be given to patients receiving sulfathiazole.

Mode of Action: At this time there are several theoretical conceptions as to the mode of action of sulfathiazole, but no one theory has been evolved which adequately explains its action. However, certain principles of treatment may be followed as a result of clinical observation with its use in several types of infection. It appears that sulfathiazole exerts its greatest effectiveness in diffuse lesions characterized by maximal tissue invasion and minimal tissue destruction. The presence of necrotic tissue or pus in a lesion prevents sulfathiazole from acting upon the organism with the same maximum effect which characterizes its action on diffuse, non-suppurative infections. Furthermore, if an infection is treated after two or three days of progression, and some degree of localization or pus formation has occurred, sulfathiazole seems clinically to accomplish little more than to protect uninvolved tissue. Although the fundamental aspects of the mode of action are still uncertain, we may apply the above considerations in the treatment of pneumonia. Therefore, it is important to start sulfathiazole medication early in the disease process before pus formation takes place. Once empyema has developed the drug is relatively ineffective and surgical intervention is indicated.

Routine Management: In the treatment of patients with pneumonia it is impossible to make hard and fast rules, for each patient must be handled as an individual case. However, we endeavor to follow a certain routine in the management of patients on our pneumonia wards. As soon as the diagnosis of pneumonia has been established, specimens for routine laboratory studies (complete blood count, urine, sputum, and blood culture) have been collected, and a negative history of sensitivity to sulfonamides has been elicited, treatment is instituted at once.

Dosage and Administration: Sulfathiazole is relatively insoluble; in an aqueous solution at 28 C. it is only .09 per cent soluble. However, in body fluids it attains a greater degree of solubility. For practical purposes we may assume that sulfathiazole is almost completely absorbed from the intestines in two or three hours after oral ingestion of moderate doses. In general, a blood concentration of approximately 4 mg. per 100 cc. of free sulfathiazole can be obtained within this time, following a 3 Gm. dose by mouth⁽⁶⁾. After the fourth hour the amount of free drug in the blood diminishes rapidly. Therefore, in order to attain and maintain an adequate blood level it is important to administer large initial doses of the drug and to continue it in smaller doses at four hour intervals, day and night. This schedule of dosage is imperative, since it is the only way that an even concentration of the drug can be maintained in the blood. Irregular or varying blood levels result in diminished therapeutic effectiveness.

An initial 3 Gm. dose by mouth is repeated in four hours and then followed by 1 Gm. every four hours thereafter (unless signs of a severe toxic reaction develop) until the required dosage has been administered. Treatment on this dose schedule, which usually maintains a satisfactory level of free drug in the blood, is continued until the temperature remains normal for forty-eight hours and the patient shows evidence of clinical improvement. It is important to bear in mind that a recurrence of spread in the infection may occur if treatment is discontinued too early. Not infrequently the initial clinical improvement, as judged by a fall in temperature, proves to be deceptive, so that carefully performed physical ex-

aminations are important to detect possible extension of the infectious process. In general, the total dosage is about 35 Gm. If patients are unable to cooperate to the extent of taking oral medication, the drug may be given through a tube introduced by way of the nose into the stomach. In certain instances, when a rapid elevation of the blood level of the drug is desired, or oral medication is impractical, a 5 per cent solution of sulfathiazole sodium (0.06 Gm. per kilogram of body weight) in sterile water can be given intravenously. This dosage should be repeated within six hours, although in our experience it is rarely necessary to give more than two intravenous injections.

Serum: The advisability of administering type-specific serum in addition to sulfathiazole is still a controversial subject. However, we believe that cases in which drug treatment has failed to bring about the expected clinical response within thirty-six to forty-eight hours should be given the benefit of combined therapy. Here again, the physician must treat each patient as an individual, and should give serum earlier when confronted with an overwhelming infection or bacteremia. When serum is to be administered, the usual preliminary sensitivity tests, conjunctival and intradermal, should always be performed. If these prove negative, after twenty minutes, further intravenous testing with undiluted serum (1 cc.) is carried out. If, after seventy minutes, no untoward reaction has occurred, the patient is given an initial dose of 100,000 units of undiluted type-specific serum intravenously, followed by further injections of serum when necessary.

Fluid Balance: After sulfathiazole is absorbed into the blood stream, a portion of the drug is conjugated by the liver into the acetyl fraction, which is practically inactive and probably represents the more toxic fraction of the drug. In general, it can be assumed that approximately 30 per cent of the drug appears in the blood as acetylsulfathiazole and 70 per cent is available as free sulfathiazole. The drug is excreted both as free and acetylated sulfathiazole mostly in the urine and usually within twenty-four hours. The excretion is similar to that of urea, but reabsorption by the tubules occurs to a greater extent, and elimination of the drug is reduced in the presence of diminished nitrogen excretion. However, the clearance is definitely increased by an increased rate

6. Reinhold, J. G., Flippin, H. F., and Schwartz, L.: Observations on the Pharmacology and Toxicology of Sulfathiazole in Man, *Am. J. M. Sc.* 199:393, 1940.

of flow of urine, and this is best obtained by forcing fluids. With a decrease in kidney function we find an increase in concentration of the drug in the blood, particularly the acetyl fraction. Therefore, should the volume of urine become too small the possibility of stone formation in the urinary tract by acetylsulfathiazole crystals is greatly increased. Hence it is extremely important, in order to facilitate the excretion of acetylsulfathiazole by the kidney, to maintain a urinary output of at least 1200 cc. daily. If necessary, fluids should be given parenterally in order to insure this output.

Alkalis: The administration of alkalis with sulfathiazole in the treatment of pneumonia seems advisable. Their use tends to decrease the incidence of sulfathiazole crystals in the urine. Equal amounts of soda bicarbonate or sodium citrate should be given with the drug.

Oxygen: The rational method of treating cyanosis and dyspnea in pneumonia is by the efficient administration of oxygen. It is of definite value in affording symptomatic relief, and is probably at times a life-saving measure. However, we feel that its use in many cases is not indicated, and in some it proves to be harmful. At the present time we resort to the use of the portable oxygen tent or the B.L.B. oxygen mask.

Adjuvants: The use of opiates for controlling pain, restlessness, cough, and insomnia is important in the treatment of pneumonia. Digitalis is administered in proper amounts when indicated, but is not used as a tonic. With chemotherapy the abdominal distention occurs less frequently and is less severe, but when it occurs it demands prompt attention. Enemas are preferable to cathartics, and, if necessary, should be supplemented by turpentine stupes or flaxseed poultices. When distention is marked, hypodermic injections of prostigmin or pitressin are often beneficial. However, it is advisable beforehand to insert a rectal tube to facilitate the passage of gas. In selected cases of distention, we have found the use of the Wangenstein apparatus effective when other methods have failed. Whiskey and brandy are helpful remedies, especially in the aged and in chronic alcoholics. Finally, the most important aid in the successful treatment of a patient with pneumonia is good nursing. There is probably no disease in which the services of well-trained nurses are more valuable.

Sulfathiazole blood levels: Several factors, such as kidney function, drug absorption, and the state of dehydration are responsible for the individual variation in the concentration of sulfathiazole in the blood. Our data fail to show any correlation between therapeutic effectiveness and the blood level of free drug in the range of 2 to 15 mg. per 100 cc. It appears that therapeutic action is not enhanced by establishing concentrations of the free form above 5 mg. per 100 cc. It is reasonable to believe that if a free level of 5 mg. is maintained, satisfactory results should be expected. Levels exceeding this limit have been shown to be associated with a greater frequency of vomiting. Also, there exists a relationship between high concentrations of acetylsulfathiazole and hematuria.

Drug failures: Sulfathiazole, like other members of the sulfonamide group, exerts maximum effectiveness in a relatively short period of time. The failure of a patient suffering with pneumonia to respond to sulfathiazole therapy within forty-eight hours usually suggests several possibilities. First, there may be an overwhelming infection with spread probably accompanied by bacteriemia. Such cases should be given the benefit of type-specific serum in addition to the drug. Second, a localized suppurative process, such as empyema, may be present, in which case surgical intervention is necessary. Third, the possibility of drug fastness must be borne in mind, although this condition is very rare. Serum is indicated in these cases. Finally, the causative agent of the infection may be an organism not affected by the drug, such as a virus. It is best to stop chemotherapy in this type of infection.

If the basic considerations just presented are consistently recognized in the management and care of pneumonia, we believe that constantly improving results will be obtained.

Sulfadiazine

Within the past few months there has become available for the treatment of pneumonia a new sulfonamide derivative, sulfadiazine. Observations⁽⁷⁾ on the absorption, distribution, and excretion of this compound indicate that it is readily absorbed from the gastro-intestinal tract, but is excreted at a

7. Reinhold, J. G., Flippin, H. F., Schwartz, L., and Domm, A. H.: The Absorption, Distribution, and Excretion of 2-sulfanilamido pyrimidine (sulfapyrimidine, sulfadiazine) in Man. *Am. J. M. Sc.* 106:201, 1941.

somewhat slower rate than is sulfathiazole. A study on the comparative effectiveness and toxicity of sulfathiazole and sulfadiazine in pneumonia has just been completed by us⁽⁸⁾. According to the mortality rates, sulfadiazine is equally as effective as sulfathiazole. Also, sulfadiazine seemed to lower the temperature somewhat more rapidly than did sulfathiazole. The toxic manifestations were approximately the same for the two drugs, although the incidence of vomiting was lower with sulfadiazine. Microscopic hematuria was encountered more often in patients receiving sulfathiazole. This latter difference in toxicity is probably a result of the lower degree of acetylation of sulfadiazine, plus the fact that acetylsulfadiazine is more soluble in urine than is acetylsulfathiazole.

Although our experience with sulfadiazine is quite limited, it is our impression that this new sulfonamide will have a place in the treatment of pneumonia and may prove to be the drug of choice.

8. Flippin, H. F., Rose, S. B., Schwartz, L., and Damm, A. H.: Sulfadiazine and Sulfathiazole in the Treatment of Pneumococcal Pneumonia, *Am. J. M. Sc.* 201:385, 1941.

SERIAL PYELOGRAMS IN NEPHROPTOSIS

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CHARLOTTE

The purpose of this paper is to review briefly the relevant literature and to present a study of 47 cases of nephroptosis seen in the Brady Urological Foundation during the two years 1937 and 1938⁽¹⁾. In studying cases of ptotic kidneys there are two important factors to be considered: the time of emptying of the renal pelvis and ureter, and the presence or absence of an obstructive lesion. The most practical method of determining the emptying time is by serial pyelography. Obstructive lesions are frequently demonstrated by a single pyeloureterogram, but occasionally it is quite difficult to distinguish functional from pathological disorders of the upper urinary tract except by a series of films. Serial pyelograms have been used for the past several years for evaluating cases of nephroptosis and determining the type of treatment to be

instituted; and at times, kinks of the ureter and apparent stasis of the pelvis and ureter have been demonstrated to produce no interference with urinary drainage⁽²⁾.

Although many articles have been written on the subject of nephroptosis, there seems to be no complete agreement among urologists as to the proper method of treatment. Lowsley⁽³⁾ is of the opinion that before surgery is instituted, inadequate drainage should usually be proven; however, in certain cases, such as nephralgia, he advocates denervation and renal decapsulation. Braasch⁽⁴⁾ has proven to his satisfaction that a movable kidney is rarely painful, and that nephropexy is indicated only when definite evidence of obstruction to renal or ureteral drainage exists, which will be demonstrated by a distortion or dilatation of the renal pelvis or ureter with resultant pyelectasis or ureterectasis. On the other hand, Bransford Lewis and others believe that if a movable kidney is demonstrated by supine and erect pyelograms, and especially if a ureteral kink is present, nephropexy is definitely indicated. Henline and Bray⁽⁵⁾ believe that pain rarely results from kinking of the ureter and that surgery is seldom indicated or beneficial in a ptosed kidney unless stasis or interference with drainage can be demonstrated. They are of the opinion that an arbitrary limit of ten minutes should be sufficient for a normal kidney and ureter to empty, and that if bilateral serial pyelograms are made, the comparative study will demonstrate the presence and usually the cause of any obstruction which might be present. C. P. Mathe⁽⁶⁾ has studied the movable kidney in regard to the production of hydronephrosis, and believes that renal mobility alone does not cause hydronephrosis; however, when the kidney descends and the upper redundant portion of the ureter sags, hangs, or comes in contact with aberrant blood vessels, with fibrous bands, or with its upper attachment to the perirenal fascia or

2. Moore, T. D.: (a) Simple Device for Serial Pyeloureterograms, *J. Urol.* 26:317-323, August, 1931; (b) Value of Serial Pyelograph in Diagnosis, *J. Urol.* 28:437-454, October, 1932; (c) Consideration of Ureter in Serial Pyelograms, *South. M. J.* 27:825-833, October, 1934; (d) Limitations of Intravenous Urography, *South. M. J.* 29:242-248, March, 1936.
3. Lowsley, O. S.: Anomalies of the Kidney and Movable Kidney, in *Lewis: Practice of Surgery*, vol. 8, chapter 4, 1929.
4. Braasch: Discussion of Acquired Renal Dystopia or Movable Kidney by Mr. Frank Kidd, *J. Urol.* 26:368-373, 1931.
5. Henline, R. B., and Bray, J. L.: Value of Serial Pyelograms in Nephroptosis, *J. Urol.* 38:620-633, December, 1937.
6. Mathe, C. P.: Intrinsic Causes of Hydronephrosis, *J. Urol.* 38:574-592, December, 1937.

Presented before the North Carolina Urological Society on October 14, 1940.

1. I am indebted to Dr. O. S. Lowsley for permission to present these cases.

to the posterior peritoneum, obstruction occurs, resulting in hydronephrosis. Hess⁽⁷⁾, in his article on renal mobility, states that if a pyelogram is taken in deep inspiration, a perfectly normal kidney may appear to be ptotic. Thompson and Bumpus⁽⁸⁾ demonstrated to their satisfaction that the majority of ureteral kinks are transient and occur in pyelograms at the order, "Take a deep breath and hold it." Moore^(2c) believes that temporary relaxation of the ureter resembling atony or ureterectasis may occur, but its inconstancy in a series of films serves to differentiate it from dilatation due to mechanical obstruction, infection or disturbances of innervation. One is probably justified in stating that the majority of urologists agree that, if there is a demonstrable delayed emptying time, with or without hydronephrosis of a ptotic kidney, and if the pain is apparently due to distention of the renal pelvis, then nephropexy is indicated. It is in this type of case, with a ptosed kidney and pain, that serial pyelography is so helpful in deciding whether the pain is of renal origin or the result of disease outside the urinary tract. Although Moore in 1931 developed a practical inexpensive device which can be fitted to the ordinary Buckey diaphragm for making serial pyelograms, yet a review of the recent literature would lead one to suspect that this important diagnostic procedure has been more or less neglected by urologists up to this time. Moore's addition is a happy compromise between the single pyelo-ureterogram and the multiple urograms of Cumming and Jarre⁽⁹⁾ using the cinex camera.

Moore^(2a), Henline⁽⁵⁾, Bray⁽⁵⁾, Herbst⁽¹⁰⁾, and others are of the opinion that the usual emptying time of a normal renal pelvis and ureter is not over ten to twelve minutes. At the Brady Foundation, any definite amount of dye remaining in the renal pelvis on the fifteen minute film is interpreted as delayed emptying.

Summary of Cases

Forty-two cases, or 89 per cent occurred in females, whereas only 5, or 11 per cent, occurred in males.

The right kidney was ptosed in 43 cases,

or 90 per cent; bilateral nephroptosis was present in 4, or 10 per cent; and in no instance was there a unilateral ptosis of the left kidney.

Of the 28 cases without serial pyelography, 16, or 57 per cent, have had nephropexy, with relief of symptoms in 13, or 81 per cent of cases (chart 1). One patient died

CHART I

Cases Without Serial Pyelograms in Which Nephropexy Was Performed

Number of cases: 16 — 57 per cent of total number of cases without serial pyelograms.

Relief of symptoms: 13 — 81 per cent.

Remarks:

Three cases were not relieved.

One patient died from anesthesia.

One patient was temporarily relieved but had a second nephropexy elsewhere, three months after discharge from hospital.

One patient continued to have right upper quadrant pain (kidney in good position).

from the anesthesia (spinal and gas-oxygen). Another patient continued to have pain in the right upper quadrant post-operatively, even though the kidney was in excellent position. The third patient was relieved of her pain for three months after discharge from the hospital; then she had a recurrence of right sided pain, and a second nephropexy was performed elsewhere. Of the 12 patients who were not submitted to surgery, 7 have not returned for further observation and treatment; 3 have been relieved by ureteral dilatation; and 2 obtained relief by wearing kidney belts (chart 2).

CHART II

Cases Without Serial Pyelograms Not Operated On.

Number of cases: 12 — 43 per cent of total number of cases without serial pyelograms.

Clinical relief by ureteral dilatation: 3 — 25 per cent.

Clinical relief by kidney belt: 2 — 16 per cent.

Remarks:

The 7 remaining cases did not return to the clinic.

Of the 19 cases in which serial pyelography was performed, 8 were found to have delayed emptying time (chart 3), while 11 demonstrated no delay in emptying of the renal pelvis and ureter (chart 4). Of the 8 patients with delayed emptying time, nephropexy was performed on 6 cases with relief of clinical symptoms. One of the 2 cases not operated upon had an associated cholecystitis for which a cholecystectomy was performed,

7. Hess, E.: Renal Mobility, J.A.M.A. 110:1818-1823, 1938.

8. Thompson, C. J. and Bumpus, H. C.: Ureteral Kinks, J.A.M.A. 94:771-772, 1930.

9. Jarre, H. A. and Cumming, R. E.: Cinex-Camera Studies of the Urinary Tract, J. Urol. 24:423-431, 1930.

10. Herbst, Wm. P.: Pyeloscopy, J. Urol. 26:233-239, 1931.

CHART III

Cases With Serial Pyelograms Demonstrating
a Delayed Emptying Time

Number of cases: 8 — 42 per cent of total number
of cases with serial pyelograms.

Nephropexy performed on: 6 — 75 per cent.

Remarks:

Clinical symptoms were relieved in all the operative cases.

One patient not submitted to surgery was a 74 year old emaciated female with a generalized visceroptosis. The other patient did not return to the clinic.

CHART IV

Cases With Serial Pyelograms Demonstrating
Normal Emptying Time

Number of cases: 11 — 58 per cent of total number
of cases with serial pyelograms.

Relief of symptoms by ureteral dilatations: 8 — 72
per cent.

Relief of symptoms by appendectomy: 1 — 9 per
cent.

Remarks:

One patient continues to have right upper quadrant pain (gallbladder and G. I. series normal). Possible case of nephralgia.

One patient did not return to the clinic.

without relief of her pain in the right upper quadrant; however, she has not returned to this clinic for further observation. The other patient was an elderly, emaciated female with a generalized visceroptosis, whose general condition did not warrant any surgical procedure.

Of the 11 cases of ptosed kidneys with normal emptying time, 8, or 72 per cent, have been relieved of their symptoms by means of intermittent ureteral dilatation. One of these patients, a 35 year old single female, with pain in the right upper quadrant, had a retrocecal chronic appendicitis for which an appendectomy was done, with complete relief of symptoms. This patient had been referred to this clinic for nephropexy, since urological studies elsewhere had revealed a right nephroptosis. One patient did not return for further study, and one patient continues to have right upper quadrant pain. Her gallbladder and gastro-intestinal x-rays were normal. It is quite possible that the latter case is one of nephralgia.

Comment

One is rather surprised to observe that of 19 cases subjected to serial pyelograms, 11, or 58 per cent, were found to have normal emptying time. In the majority of cases of nephroptosis, serial pyelograms are performed only on cases in which it is suspected

that delayed emptying is the cause of the pain. Had these cases not had serial pyelograms, they probably would have been subjected to nephropexy, and in all probability would have continued to have pain.

Not only in nephroptosis but also in any type of hydronephrosis due to ureteral obstruction by calculi, infection, aberrant vessels, or neuromuscular dysfunction, serial pyelography is definitely indicated. Of course, the majority of us do not have serial pyelographic trays in our offices, but I think that every hospital should have one. From this study, it would seem logical and practical for urologists to observe the pyelo-ureterograms immediately after developing the film, and if a nephroptosis or hydronephrosis is noted to obtain a film fifteen minutes after the injection of the contrast medium. This fifteen minute film would show whether or not there was delayed emptying time.

Summary

1. An analysis of 47 cases of nephroptosis has been briefly presented. On 19 of these 47 cases, serial pyelograms were made to differentiate those with delayed emptying time from those in which the kidney pelvis emptied normally.

Eleven of the 19 patients on whom serial pyelograms were made were shown to have a kidney pelvis which emptied in normal time. Eight of these 11 cases obtained symptomatic relief by ureteral dilatation.

Eight of the 19 cases in which serial pyelograms were made were demonstrated to have delayed emptying time, and of these 8, 6 were completely relieved by nephropexy.

2. The serial pyelographic tray devised by Moore is a simple, practical method of studying the emptying time of the renal pelvis and ureter.

3. Nephropexy is rarely indicated or beneficial in cases of nephroptosis with a normal emptying time.

4. Rarely should nephropexy be performed when there is doubt as to the final result; it should be reserved usually for cases in which definite delay in emptying time is demonstrable.

The Effect of Totalitarianism on the Practicing Physician.—The nearer one approaches totalitarianism in government, the greater is the tendency to make the practicing physician an employee of the state rather than of the individual.—A. C. Callister: The Medical Profession's Ideals in Medical Service, Rocky Mountain M. J. 38:107 (February) 1941.

THE CLINICAL STATUS OF THE VITAMINS

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WILSON

The purpose of this paper is to present concisely and conservatively some aspects of the clinical status of the vitamins. The vitamin alphabet during the past twenty-five years, and particularly during the past five years, has grown in length and latitude; new letters have been added, and some of the original have been subdivided.

A vitamin has been defined as "being one of a group of definite organic chemical substances, of widely different structures and physiologic action, present in minute amounts in nature, indispensable to normal nutrition yet itself contributing no energy or building material to the body." No vitamin can take the place of another, and an adequate amount of each is required at all times for normal growth and development, and for maintenance of health.

I know that each of you is impressed, as I am, by the multiplicity of vitamin preparations that are available, and it is indeed difficult to know what to prescribe, with both scientific and commercial development so rapid. Each week new preparations appear; new fields of scientific investigation are being explored; and reports continue to show evidence of the ever widening scope of vitamin therapy.

There are several methods of classifying the vitamins, but the most common division is into water soluble vitamins and fat soluble vitamins. The vitamin potency of a substance is usually expressed in terms of units. Each unit represents either a definite degree of biologic activity or a definite weight of the pure vitamin. Since the absence of any one of the vitamins from an otherwise balanced diet over a period of time produces a typical syndrome which is termed a deficiency disease, I am going to consider hastily the vitamins individually.

Vitamin A

Vitamin A is one of the fat soluble vitamins. It is known as the anti-ophthalmic vitamin and the anti-infective vitamin. Alpha, beta, and gamma carotene and cryp-

toxanthin are the precursors of vitamin A and have the ability to produce the characteristic response in the animal body.

Vitamin A is considered helpful in the following conditions: xerophthalmia; nyctalopia, or night blindness; hyperkeratosis of the skin; lowered resistance to infection; and retarded growth and development. Vitamin A is also employed as a supplement to the diet of expectant and nursing mothers.

Vitamin A is found chiefly in cod liver oil, halibut liver oil, apricots, carrots, butter, cheese, liver, egg yolks, and leafy green vegetables. This vitamin is stored to some extent in the liver, kidneys, and subcutaneous fatty tissue.

The international and U. S. P. units of vitamin A is the growth-promoting and anti-xerophthalmic activities of 0.6 micrograms of the international standard beta-carotene, or the equivalent amount of U. S. P. standard reference cod liver oil. The daily requirement of vitamin A for the child is 7,000 international units; for the adolescent, 9,000; for the adult, 8,000; and for expectant and nursing mothers, 10,000.

Vitamin B

Vitamin B is one of the water soluble vitamins. It is now known to be a complex mixture of at least six vitamins or vitamin principles. The best known of these are vitamins B₁ and B₂, both of these having been studied and identified.

Vitamin B₁, or thiamin chloride, is known as the anti-neuritic vitamin, the anti-beriberi vitamin, and the appetite stimulating vitamin. This factor was isolated and synthesized in 1936. Vitamin B₁ is stable except in the presence of alkalis or heat. With the synthesis of vitamin B₁, intensive study into the nature and symptomatology of beriberi became possible. Thiamin chloride today is used with gratifying results in the treatment of beriberi, in anorexia of dietary origin, and in the neuritis of pregnancy, pellagra, and alcoholism. Vitamin B₁ aids reproduction, promotes growth and lactation. The administration of thiamin chloride to cases of subclinical deficiency will often increase the appetite, produce a feeling of well-being, and relieve the symptoms arising from beriberi. It is valuable in relieving certain types of bradycardia and in certain cases of furunculosis.

Several methods of measuring thiamin chloride are used. The international and the

U. S. P. units are equivalent to the vitamin B₁ activity of 3.33 micrograms of thiamin chloride. One international unit is equal to 2 Sherman-Chase units.

Vitamin B₁ is found chiefly in rice polishings, yeast, wheat germ, cereals, nuts, egg yolk, lean pork, organ meats, and leafy green vegetables.

Vitamin B₂ (G) is known as the anti-pellagra and anti-dermatitis vitamin. It is water soluble and stable to heat. It is of value in treating pellagra, certain secondary anemias, neuritis, and cheilosis. Some authorities report that vitamin B₂ is essential to normal growth, and is of value in the prevention of cataracts, keratitis, and some intestinal conditions.

Vitamin B₂ is found chiefly in yeast, wheat germ, eggs, liver, and leafy green vegetables.

The unit of B₂ is the Sherman-Bourquin unit: the amount of vitamin B₂ which, when fed to rats deficient in the vitamin, will produce a standard growth response of 3 Gm. per week over a 28-day period.

The daily requirement of B₂ for infants is 300 Sherman-Bourquin units; for adolescents, 500; for adults, 800; and for expectant and nursing mothers, 1,000.

Nicotinic acid (amide) is the P. P. (pellagra-preventing) factor. It is water soluble and heat stable. It is a specific for pellagra. Nicotinamide has been used, with varying results, to relieve the distressing nausea, vomiting, and anorexia accompanying cases of radiation sickness, and to decrease porphyrinuria in pellagra and other conditions. There are also reports of treatment by nicotinic acid in association with thiamin chloride of a few cases of Vincent's disease, sulfanilamide cyanosis, and Meniere's syndrome. As yet, there is no unit dosage in terms of milligrams of nicotinic acid amide. The average daily requirement is 50 to 500 mg. The chief sources of nicotinamide are yeast, liver, wheat germ, and lean meat.

Vitamins B₃, B₄, and B₅ are still largely in the field of the unexplored. They have been studied experimentally in the laboratory, but as yet their clinical significance has not been established. However, the fact that deficiency of certain of these factors leads to pathologic changes in the test animals suggests that they may be of definite value in the treatment of human beings.

Vitamin B₆, or pyridoxine, has specific

value in acrodynia in rats and microcytic anemia in dogs, and is essential for human nutrition. There are certain pellagic symptoms, such as abdominal pain and difficulty in walking, that do not respond to treatment without vitamin B₆. As yet there is no unit dosage for vitamin B₆. The average daily requirements are not known. The usual dose is 10 to 50 mg. Vitamin B₆ is found primarily in liver, rice, and yeast.

The various vitamin B factors commonly occur together in nature, and it is only natural to assume and expect that often better results are obtained with the whole complex than with individual factors.

Vitamin C

Vitamin C, or the anti-scorbutic vitamin, is water soluble. This vitamin becomes inactivated by oxidation and high temperature. Vitamin C was isolated from the adrenal cortex in 1932. It is a specific for scurvy, both acute and latent, and for some dental disorders, such as pyorrhea and dental caries. Vitamin C is of value in treating certain infectious states, such as rheumatic fever and tuberculosis. It is of importance in treating anemia and anorexia. Vitamin C increases the capillary resistance in certain diseases, such as hemorrhagic nephritis and thrombocytopenia.

The unit of vitamin C is the international unit, which is the amount equal to the anti-scorbutic activity of 0.05 mg. of standard ascorbic acid.

Vitamin C is found chiefly in citrus fruits, such as lemons, oranges, and grapefruit, and in tomatoes, cabbage, pineapples, and spinach.

The average daily dose of vitamin C for infants is 200 to 400 international units; for adolescents, 400 to 800; for adults, 400 to 800; and for expectant and nursing mothers, 500 to 1,000.

Vitamin D

Vitamin D, or irradiated ergosterol, known also as the anti-rachitic vitamin, is another of the oil soluble vitamins. Ergosterol is the precursor of vitamin D. It is present in the skin, and when the ultra-violet rays of direct sunshine or the proper artificial source of the vital radiation activate the ergosterol in the skin, it is converted into a number of substances. One of these, calciferol, is regarded as vitamin D.

Vitamin D is essential for the metabolism

of calcium and phosphorus, and an adequate amount of calcium, phosphorus, and vitamin D are necessary for bone formation and for proper glandular function. Vitamin D corrects infantile rickets, spasmophilia, and osteomalacia. It also promotes growth and increases resistance and muscular activity.

Vitamin D is present in cod liver oil, halibut liver oil, egg yolks, and irradiated foods.

The international and U. S. P. unit is equivalent to the anti-rachitic activity of 1 mg. of standard solution of irradiated ergosterol, or .025 micrograms of crystalline vitamin D. The daily requirement for infants is 300 international units; for adolescents, 600; for adults, 500; and for expectant and nursing mothers, 800.

Vitamin E

Vitamin E, or alpha-tocopherol, is known as the anti-sterility vitamin. It is an oil soluble vitamin. It is of definite value in certain cases of threatened abortion, having brought about successful termination of pregnancy in some such cases. Recent reports by various investigators point to vitamin E as being of value in the treatment of muscular dystrophy, muscular atrophy, and amyotrophic lateral sclerosis. It is reported as being of value in certain cases of polyneuritis due to arsenic therapy, and in these cases is given in conjunction with vitamin B₁₂. The daily requirement of vitamin E is 1,000 to 2,000 mg. of wheat germ oil. The Evans Burr unit is the minimum dose which will cure sterility induced by a diet deficient in vitamin E in the female rat. Vitamin E is found chiefly in wheat germ, egg yolks, lettuce leaf, and vegetable oil.

Vitamin K

Vitamin K, the anti-hemorrhagic vitamin, is fat soluble. The full clinical significance of vitamin K has not as yet been ascertained, but vitamin K is essential for the synthesis of prothrombin in man. It is of value in hemorrhagic diathesis of obstructive jaundice, in intestinal obstruction, and in other conditions where the prothrombin content of the blood is low. Recently synthetic preparations with vitamin K activity have been isolated. These are stable and readily obtained, thereby permitting a wide field of investigation with this new addition to the vitamin alphabet. Vitamin K is also used

in the treatment of hemorrhagic disease of the newborn. Since the determination of the prothrombin content of the blood reveals that the newborn infant possesses a smaller fraction of prothrombin complement than an adult, and since we cannot tell by antepartum examination of the mother's blood which newborn will have a deficiency, it is being advocated by some that a routine administration of vitamin K be given during the last month of pregnancy. Chief sources of vitamin K are alfalfa, green vegetables, hog liver fat, egg yolk, and soy bean oil.

The daily requirement is not known, but in administering vitamin K, if there is a deficiency of bile in the intestinal tract, bile salts are always given. The Thayer-Doisy unit is that quantity of vitamin K which gives a clotting time of ten minutes or less in chicks on a vitamin K deficient diet. Vitamin K may in the near future prove of great value to the clinician, the surgeon, and the obstetrician.

Conclusion

Vitamins are not a panacea. They have been used and are being used indiscriminately. A person who partakes of a normal balanced diet does not need the addition of vitamin supplements. However, we must not lose sight of the fact that in this day of stress and strain, of dietary fads, of malnutrition of economic origin, and of abnormal social environment, we do encounter and shall continue to encounter many people who do not partake of a proper diet, and it is in these that we must look for clinical and sub-clinical avitaminosis.

The Study of the Patient.—Your study of the patient should be skillful and intelligently complete, not needlessly comprehensive. If every known examination were made of every patient, much that goes undiscovered in diagnosis might be revealed, but who could survive the ordeal physically, psychically or financially? Certainly, a sufficiently complete diagnostic survey should be made of each condition until its nature is clear, but the routine performance of needless tests indicates a lack of skillful observation and thinking, dulls clinical acumen, penalizes patients, wastes time and material, and gives the public an incorrect view of the cost of sound medical care. Do not misinterpret—let the study be thorough, expand it as far as need be to solve a given riddle or to advance knowledge, but do not expect mere elaboration of procedure to replace your clinical sense, nor rely on it to impress your colleagues or your clientele.—Austrian, Charles R., M.D.: *The Care of the Patient*, New England J. Med. 223:697 (October 31) 1940.

VITAMIN K IN THE PREVENTION AND TREATMENT OF HEMORRHAGIC DISEASE OF THE NEWLY-BORN INFANT

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and

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Despite numerous reports on the efficacy of vitamin K-active drugs in the prevention and treatment of hemorrhagic disease of the newly-born infant, the administration of these drugs has not been at all widespread. We believe that one reason for this is the fact that it has not been emphasized strongly enough to the profession, especially outside of the large teaching hospitals.

Although the incidence of clinical hemorrhagic disease is probably not over 1 per cent of live births, the impression is growing that this figure does not represent the incidence of all bleeding states associated with hypoprothrombinemia in the neonatal period. It has been shown conclusively by many workers that hemorrhagic disease is always associated with a concomitant lowering of the blood prothrombin, and that this may be prevented by the administration of vitamin K-active materials. It is true that one cannot expect vitamin K to lower the incidence of intracranial hemorrhage due to the tearing of a large blood vessel. However, we can expect it to lower the incidence of those cases characterized by prolonged oozing of blood. A case in point is that of an infant seen by us a few months ago, who developed a subdural hemorrhage on the third day of life, when the blood prothrombin time was definitely raised. If this infant had been protected by vitamin K, we feel sure that this slowly increasing hemorrhage would not have occurred.

A study is under way at the present time at Duke Hospital*, which confirms the findings of other investigators^(1, 2) that this almost constant occurrence of hypoprothrombinemia during the first few days of life may be prevented by the proper use of vitamin K-active materials, and that no adverse effects

result from their use. These substances are now available commercially from many of the larger pharmaceutical houses, and are inexpensive, so that by treating the mother, complete protection may be given to the infant at a cost of less than one dollar. These substances are derivatives of, or are closely allied to, the base substance 2-methyl-1, 4-naphthoquinone. This drug is very soluble in oil and slightly soluble in water, and comes under a variety of trade names[†], in oil solution, tablets, or capsules. Derivatives with greater solubility in water are now appearing, which may be used orally, intramuscularly, or intravenously. The more water-soluble forms are preferable, since absorption does not depend upon normal fat absorption in the intestine, and the drug is tolerated better by a newly-born infant. Vitamin K will begin to exert its effect of lowering the blood prothrombin time of the infant very rapidly after intravenous injection⁽³⁾, and within two hours of oral administration, but not for six to eight hours after the intramuscular injection of the solution in oil. Further work is being done on the dosage and effect of the newer water soluble compounds.

A satisfactory plan of treatment has been established in this clinic, in which the vitamin K is used in the form of 2-methyl-1, 4-naphthoquinone. Certain of the derivatives with increased water solubility will require about twice the dosage recommended below:

1. If the expectant mother is being followed regularly, 1 mg. of 2-methyl-1, 4-naphthoquinone is given by mouth daily during the last month of pregnancy.

2. If the mother is not seen until labor has begun, 6 mg. of 2-methyl-1, 4-naphthoquinone in oil, or its equivalent in aqueous solution, is given by mouth. The equivalent aqueous solution may be given intravenously. (The intramuscular injection of the drug in oil after the onset of labor requires too long a time for absorption to guarantee protection to the infant.)

[†] Proklot—Lilly; Kayquinone—Abbott; Thyloquinone—Squibb; Quino-thrombin—Lederle.

1. Shettles, L. B., Delfs, E., and Hellman, L. M.: Factors Influencing Plasma Prothrombin in the Newborn Infant: II Antepartum and Neonatal Ingestion of Vitamin K Concentrate, Bull. Johns Hopkins Hosp. 65:419-426 (Nov.) 1939.
2. Waddell, W. W. Jr., Guerry, DuP. III, and Birdsong, McL.: The Role of Vitamin K in the Etiology, Prevention and Treatment of Hypoprothrombinemia and the Hemorrhagic Diathesis of the Newly Born, South. M. J. 33:974-979 (Sept.) 1940.
3. Norcross, J. W., and McFarland, M. C.: Intravenous Use of 2-Methyl-1, 4-Naphthoquinone in Hypoprothrombinemia, J.A.M.A. 115:2156-2161 (Dec. 21) 1940.

* From the School of Public Health of the University of North Carolina, and the Departments of Pediatrics and Biochemistry, Duke University School of Medicine, and Duke Hospital.

* This study is being carried out with the kind cooperation of the Obstetrical Service of Duke Hospital.

3. If the mother has not received vitamin K daily for at least one week before delivery, and the larger dose has not been given at least six hours before delivery, the infant should be given 1 mg. of 2-methyl-1, 4-naphthoquinone as soon as possible after birth, either orally, intravenously, or intramuscularly. A double guarantee of protection will be afforded if *all* infants, regardless of prenatal treatment, are given this added dose of 1 mg.

4. In an unprotected infant, any evidence of bleeding from the umbilicus, from the gastro-intestinal tract, or intracranially, should be treated as a case of hemorrhagic disease. One milligram of 2-methyl-1, 4-naphthoquinone should be given immediately, by the intravenous route, or by mouth. It is not necessary to give blood except to treat anemia resulting from blood loss. Fresh blood by vein will restore the blood prothrombin level, but only temporarily if the

prothrombin level is very low. It has been shown that intramuscular blood is of little value in treating hypoprothrombinemia⁽⁴⁾.

The accompanying table illustrates the course of six unprotected infants born at Duke Hospital who showed evidence of hemorrhagic disease, or a markedly prolonged blood prothrombin time during the course of this study. Case 3 illustrates the point that the intramuscular injection of 2-methyl-1, 4-naphthoquinone in oil to the mother late in labor does not protect the infant. All the other cases show a very satisfactory recovery of the blood prothrombin from the administration of vitamin K. Case 6 is of interest in that with the prolonged prothrombin time so soon after birth, a further drop in the blood prothrombin would be expected if treatment had been withheld. Had an intracranial hemorrhage resulted following a

4. Lawson, Robert B.: The Treatment of Hypoprothrombinemia (Hemorrhagic Disease) of the Newborn Infant, *J. Ped.* 18:224-234 (February) 1941.

Case	Age	Prothrombin Time*	Treatment†	Remarks
1. C. P. 3260 Gm.	5 hr.			Emesis dark material.
	13 hr.	50 sec.	1 mg. K in oil by mouth and 1 mg. intramuscularly.	Emesis dark material and blood.
	18 hr.	45 sec.		
	37 hr.	32 sec.		Large black stool.
	57 hr.	24 sec.		Complete recovery.
2. F. L. 3425 Gm.	12 hr.	32 sec.	1 mg. K in oil by mouth.	Large cephalhematoma rising. No other evidence of bleeding.
	60 hr.	90 sec.		
	61 hr.			
	62 hr.	38 sec.		
3. B. H. 1650 Gm.			1 mg. K in oil intramuscularly to mother 4 hr. antepartum.	Eclamptic mother; feeble, premature infant.
	10 hr.	43 sec.		Cyanotic spells.
	22 hr.	8 min.		Attempt to give vitamin K by mouth was unsuccessful and the infant died with terminal bleeding from the nose. Autopsy showed intracranial hemorrhage, and hemorrhage in lungs and esophagus.
4. C. H. 4210 Gm.	1 hr.	28 sec.	1 mg. K in oil by mouth.	No evidence of bleeding.
	48 hr.	135 sec.		
	49 hr.			
	50 hr.	45 sec.		
	62 hr.	26 sec.		
5. W. C. 3520 Gm.	27 hr.	35 sec.	1 mg. K in oil by mouth.	No evidence of bleeding.
	72 hr.	116 sec.		
	73 hr.			
	73¾ hr.	85 sec.		
	88 hr.	31 sec.		
6. R. G. 4570 Gm.			1 mg. K in oil by mouth.	Difficult delivery. Infant with Erb's palsy.
	3 hr.	85 sec.		No evidence of bleeding.
	4 hr.			
	15 hr.	40 sec.		
	27 hr.	30 sec.		

*All prothrombin times are done by the direct micro-method described in another publication⁽⁴⁾. Normal adult controls gave micro-prothrombin times of 19-20 seconds.

†The drug (K) used in these cases was 2-methyl-1, 4-naphthoquinone supplied through the courtesy of Eli Lilly & Co.

delivery difficult enough to cause an Erb's Palsy, such as in this case, it would have been customary to attribute the intracranial hemorrhage to trauma alone. We feel that many cases of so-called traumatic intracranial hemorrhage would not occur if the infants were protected as this one was.

Summary

1. A plan is suggested for the routine administration of vitamin K to women in the last month of pregnancy, and to newborn infants.

2. Illustrative cases of hypoprothrombinemia are reported briefly.

3. It is urged that all physicians adopt a plan for the routine use of vitamin K or one of its substitutes for the prevention of hemorrhagic disease of newly-born infants.

NEUROLOGICAL, ORTHOPEDIC AND THERAPEUTIC ASPECTS OF CEREBRAL PALSY

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In recent years the belief that a neurological birth lesion carries with it an altogether hopeless prognosis has changed; it is now realized that the child who has a defect can compensate for it to a certain degree. Although central nervous tissue destroyed by injury or disease can never regenerate, unimpaired nervous tissue can by stimulation to increased activity, be made to substitute for the function of the missing cells. Therapy based on this fact was first used for the nervous system lesions of men wounded in the World War and has since been applied in injuries resulting from industrial accidents.

From a therapeutic standpoint it is important to divide the cases of lesions of the central nervous system into three groups on the basis of age of onset: first, patients who were affected at or before birth; second, patients who have acquired the lesion during

childhood or youth, usually from trauma or some acute infection; and third, patients who have developed the affection during later years as a result of a disease or accident of adult life. The first group, which includes both congenital cases and those injured at birth, is composed of patients who have never known normal motor function. The second and third groups are more nearly alike, as the damage did not occur until after the primary motor patterns had been established. There may, however, be great differences between the second and third groups since there is theoretical ground for the belief that in a child there is more unused nerve tissue capable of stimulation for the re-establishment of the lost function.

Phelps has made a thorough study of the first group⁽¹⁾. He calls attention to the fact that at one time all paralytic children, except the flaccidly paralyzed or infantile paralysis cases, were grouped together and called "spastics." Spastic is not an accurate term, because less than 50 per cent of these children show spasticity. Hence in referring to these patients it is better to use the term cerebral palsy.

Recent neurological studies⁽²⁾ have made possible a useful subdivision of the first group. Crothers^(2a) studied the defects of birth injuries and of congenital anomalies of the central nervous system and discussed their differentiation. His patients were originally divided into those with pyramidal and those with extrapyramidal lesions. Subsequently the pyramidal system has been studied thoroughly by neurologists and neuro-physiologists, and the chief characteristic of pyramidal injuries has been shown to be spasticity, or stiffness and tenseness of the muscles. It has also been demonstrated that in birth injuries or in congenital anomalies the pyramidal system lesion may involve especially the motor area (area 4 of Brodmann) or the premotor area (area 6)^(2a, c). Spasticity is chiefly caused by in-

1. Phelps, Winthrop M.: Personal Communication.

2. (a) Ford, Frank R.; Crothers, Bronson; Putnam, Manion C.: *Medicine Monographs*, XI, Baltimore, Williams and Wilkins Co., 1927.

(b) Brodmann, K.: *Vergleichende Lokalisationslehre der Grosshirnrinde*, Barth., Leipzig, 1909.

(c) Fay, Temples: *Behavior Problems in Children; The Importance of Training and Conditioning*, Child Research Clinic Series, Woods Schools, Langhorne, Pa. 1:5-44, 1935.

(d) Phelps, Winthrop M.: *Cerebral Birth Injuries: Their Orthopedic Classification and Subsequent Treatment*, J. Bone and Joint Surg. (October) 1932.

(e) Phelps, Winthrop M.: *The Therapeutic Significance of the Mechanical Analysis of Motor Handicaps*, in *Proceedings of the Second Institute on the Exceptional Child*, The Research Clinic of Woods Schools (October) 1935.

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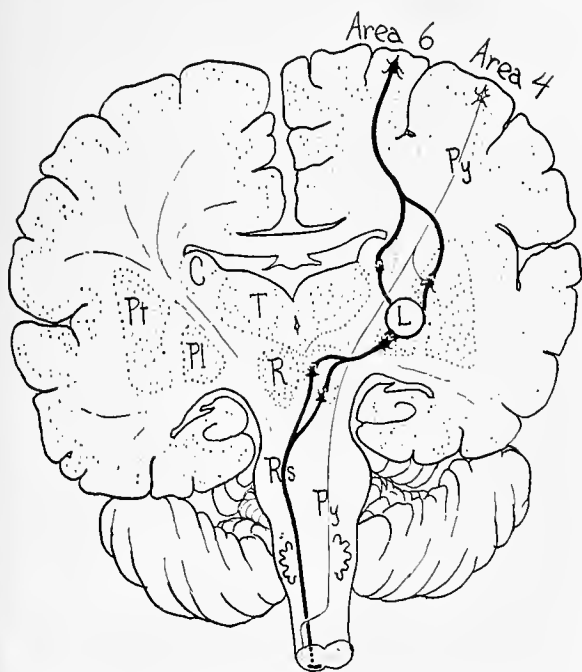


Diagram of the extrapyramidal chain of neurons (heaviest lines) and the usual site of the lesion in cases of athetosis and dystonia, in their relation to other structures. C—caudate nucleus; L—lesion; Pl—globus pallidus; Pt—putamen; Py—pyramidal tract; R—reticular substance; Rs — reticulospinal tracts; T — thalamus. Courtesy of Dr. Tracy J. Putnam and The Journal of Bone and Joint Surgery.

involvement of area 6. As Fay and others pointed out, in lesions affecting only area 4 there may be flaccid paralysis of the extremities from cortical damage⁽¹⁾. Area 4 is seldom involved alone, however, and when area 6 also is damaged, spasticity usually predominates. Little⁽³⁾, in 1843, was the first to describe the syndrome which results from the involvement of these important parts of the pyramidal system.

The extrapyramidal cases have been found to result from defects of the various basal nuclei, and have been classified as bulbar, cerebellar, thalamic, and other syndromes. These syndromes are partly proved and partly theoretical, the exact function of the various parts of the basal nuclear mechanism not having been proved. Since the internal capsule, containing the pyramidal fibers, passes through the basal nuclear mechanism, extensive hemorrhage in the basal area may involve also the internal capsule and produce, in addition to the basal syndrome, a spasticity from injury to the pyramidal system.

The foregoing neurological considerations form a basis for the diagnosis and subclassification of cerebral palsy. In the individual case, however, our practical interest lies not so much in establishing the exact neuropathology as in determining clinically the type of paralysis affecting the patient, how his muscle power deviates from the normal, and what can be done to lessen his handicap.

It is of practical importance to recognize promptly the symptoms of a neurological lesion dating from birth. The early diagnosis of such a lesion is usually difficult. Klingman⁽⁴⁾ in a study of the histories of new born infants with motor disabilities found certain characteristic features. There are convulsions, immaturity, abnormal somnolence, excessive crying, asphyxia, apneic attacks, irregular breathing, difficulty in suckling, rigidity, opisthotonos, slow rhythmical adduction and abduction, persistent singultus, yawning, and frequent vomiting. Some of the symptoms are not seen until the latter part of the first year when convulsions and development of static functions can be noticed; then, as myelinization in the nervous system becomes complete, the varying pictures of spasticity, athetosis, ataxia, etc., can be seen.

Both the birth history and the physical signs are helpful in suggesting the pathogenesis of the lesion^(2a, c). If the former appears normal and the neuromuscular difficulty is symmetrical, the lesion is in all probability the result of a *congenital malformation*. On the other hand, if the history includes premature labor, extended labor, primiparity, poor obstetrics, precipitate delivery, or post-natal hemorrhage, the lesion is probably the result of a *birth injury*. If the birth history and pregnancy include no irregular symptoms, if the trouble manifests itself after infection and if the somatic involvement is irregularly distributed, the lesion is likely to be progressive.

For orthopedic treatment, it is necessary not only to know something of the remote cause but also to consider the total functional ability, mental and physical, of the individual. In outlining the therapy used at the Cerebral Palsy Clinic we are guided by Phelps'^(2d) classification which was made on a motor basis and included the following groups: (a) spasticity, (b) athetosis, (c) incoordination or ataxia, and (d) tremor. He

3. Little, W. J.: Course of Lectures on the Deformities of the Human Frame, Lancet 1:350-354, 1843-1844.

4. Klingman, O.: Neurological Aspects of the Birth Injured, N. Y. State M. J. (October) 1934.

used a fifth type, overflow or synkinesia, which is often associated with spasticity, athetosis, and incoordination. In group *a* spasticity is the outstanding characteristic, the involved muscles being hyperirritable and the tendon reflexes hyperactive to all stimuli. Clonus and a positive Babinski reflex are often present. Usually there is absence or diminution of the abdominal and cremasteric reflexes. The stretch reflex, which Phelps^(2d) considers the most characteristic sign of spasticity, is always present. As an illustration he points out that if extension of the elbow of a spastic arm is willed, the stretching of the biceps causes a contraction of the biceps resulting in a characteristic resistance to extension. This uncontrollable contraction is the difficulty which occurs every time the antagonist of a spastic muscle is willed to contract. The source of the difficulty is in the pyramidal system.

In pure athetosis (group *b*) the pyramidal system is not involved^(2d, 3). In this type of palsy there is an involuntary series of motions usually proceeding from the proximal to the distal muscle group, superimposed on and independent of the purposeful movement. The stretch reflex is absent. The tendon reflexes are normal and there is no clonus. The Babinski reflex may or may not be present, and the abdominal and cremasteric reflexes are usually active. The athetoid movement is absent during complete relaxation and during sleep. In athetosis, involuntary motion is superimposed upon normal voluntary motion. The volitional use of the muscles controlling the organ is normal, but the willed motion is modified and distorted by involuntary muscle contraction. For example, when the athetoid patient attempts to drink from a glass he may be sufficiently relaxed and quiet in his automatic controls to grasp the glass. When, however, his higher centers become engaged in the thought of drinking, their quieting effect is lost; involuntary motions then proceed from the damaged basal centers, greatly distorting the purposeful movement. The source of the trouble is in the basal region of the brain where automatic control centers are located.

In incoordination or ataxia (group *c*) there is an impairment of cerebellar control resulting in inability to carry out desired

movements in the desired directions, because the kinesthetic sense is lost. In such patients the disturbance of the proprioceptive mechanism causes a characteristic loss of equilibrium in walking and standing.

Overflow may be associated with any of the above palsies. It is involuntary motion in one group of muscles resulting from voluntary attempts at motion in another group. It may be limited to the face or to one or more of the extremities, or it may be generalized. A common example is the facial overflow or grimacing which accompanies voluntary motion of the extremities.

Tremor (group *d*) is characterized by involuntary rhythmical, recurrent contractions which may be limited to a single muscle or muscle group. The tremor pattern is unchanged by superimposed voluntary motions.

It is significant to note that rarely does one of the above classifications occur in pure form. As a rule one type will dominate the picture with evidence of other disturbances present.

The aim of the orthopedic study is to supplement the neurological diagnosis in order to determine the practicability and advisability of treatment. The relation of the motor disturbance to voluntary motion must be studied with the idea of therapy in mind.

The mental status of patients with nervous system lesions does not show a regular distribution along the learning curve. It is found that their mental functions are irregular in that they have special abilities and disabilities. The patients whose lesions are in the basal region of the brain usually have normal minds. When the lesion is in the pyramidal system, other centers involving concept formation are likely to be involved and the intelligence quotient is very irregular. Normal expression is often so impeded by neuromuscular difficulties that the individual may be rated as a moron or even as an idiot. Likewise many good minds are retarded by the limited environment to which the patient is confined because of the neuromuscular difficulties. The educator's duty is first to offer such a patient a measuring scale which will reveal his true mental status and then to adjust the academic subjects to his capacity. A few psychologists have adapted certain standard tests to meet the complicated mental and physical limitations of these patients. McIntire has modified the Binet test by substituting material for measuring the mental function previous-

3. Tilney and Riley: Form and Function of the Nervous System, New York, Paul B. Hoeber, 1938, p. 851.

ly masked by the physical disability. This test reveals the speed of learning and the mental capacity of the patient.

Establishment of the Clinic at Duke University

In 1937 a grant was made to Duke University for a study of the educational and medical problems presented by children affected by cerebral palsy. The grant was made with the realization that this type of child and his many perplexing problems presented an obligation to the practicing orthopedist. During the first year of work, public and private surveys were made, hospital files reviewed, and data tabulated. The result of these studies was the establishment of a dormitory of twelve beds for the treatment of children showing a nervous system lesion dating from birth and manifesting itself in motor disability. The dormitory was opened in March, 1938, as a part of the Division of Orthopedic Surgery of the Duke University School of Medicine, with other departments cooperating as needed.

The primary purpose of the clinic is to provide a practical approach to the treatment of these children, and to fit them for the environment in which they are to live. Also it is desired that the graduates of the school of medicine as well as the graduates of other departments of the university should realize the potentialities of this type of child.

Detailed examinations to establish the nature and distribution of the neuromuscular losses is necessary before treatment can begin. On one afternoon of each week the facilities and personnel of the Orthopedic Division of Surgery are available for the preliminary examination and classification of new cerebral palsy patients. A careful study of the muscular system helps in ascertaining the location and type of lesion, and provides a basis for determining the nature of treatment.

Treatment⁽⁶⁾

The most essential and the most beneficial treatment of cerebral palsy is motor training. The acquisition of the ability to relax voluntarily is fundamental to motor training. Conscious relaxation is necessary to the spastic patient to prevent muscle block brought about by the dispersed stimulus as it comes simultaneously to synergistic and

antagonistic muscle groups. To the atetoid patient relaxation is necessary for quieting the voluntary control which indirectly influences the automatic centers.

Nothing can take the place of the "softness" which comes through relaxation of the overly-stimulated muscular system. The idea of relaxation may be conveyed to the child in the following ways: (1) Ask him to see how quiet he can remain for a count of ten and later for longer periods, (2) make him conscious of irregular movements when they occur, and (3) contrast for him the feel of a relaxed muscle group with that of a tense, contracted group. Addoms^(6a) states that the patient should strive to cultivate the memory of muscular sensations in order to recall the difference in feeling between relaxation and tension. The instructor can facilitate this response by using verbs which convey a concept of the result desired; for example, "soften" or "loosen" is more significant than "relax". Addoms^(6a) also suggests that we give directions which appeal to the child's imagination, such as, "Feel soft like a kitten. Make this muscle feel like molasses. Feel as if you were melting. Feel as heavy as a bag of flour. Feel as if you were sinking down in a mattress." Avoid the use of negative commands; for example, a child in being taught to crawl should be told to "soften like a kitten," instead of "don't tighten." When the child who habitually holds his shoulder girdle fixed in a high position is given the idea that he is walking with a lead weight from each elbow, his shoulders have a tendency to drop to the natural level as imagination releases the tension throughout the body. Addoms also illustrates how tension may be released through the neuromuscular mechanism by having the patient count rhythmically by three's or two's, consuming his excess energy by this mental process.

When relaxation has been mastered, exercise treatments are begun. The first ex-

6. (a) Addoms, E. C.: Treatment of Birth Injured Children. *J. Health and Physical Education*, (September, October) 1936.

(b) Doll, Melcher, and Phelps: *Mental Deficiency Due to Birth Injuries*. New York, Macmillan Company.

(c) Pusitz, M. E.: The Treatment of Cerebral Palsies From the Standpoint of the Physical Therapist (Read before the Eighteenth Annual Convention of the American Physiotherapy Association, Denver, Colorado, June 27, 1939).

(d) Rutherford, John L.: Spastic Paralysis, *The Physiotherapy Review*, vol. 19, no. 6 (November, December) 1939.

(e) Klingman, W. O., and Earl A. Carlson: Observation Factors Inhibiting Choreoathetosis, *Bull. Neurological Institute, V.*, New York City, (August) 1936.

(f) Cleveland, David: The Relationship of Physical Therapy and Neurology, *The Physiotherapy Review*, vol. 18, no. 6 (November, December) 1938.

ercises are simple passive motions at the large proximal joints—namely, the shoulder and hip^(6b).

Motion at the shoulder can be considered to consist of three pairs of movements: forward and backward flexion, abduction and adduction, and internal and external rotation. After the patient has learned to relax the muscles of the shoulder joint for several minutes at a time, each of these three pairs of motions can be started passively to a simple rhythm or count. At first the movements must be slow and of small range in order not to stimulate undesired antagonistic muscular contractions.

When the patient has made the motions a part of himself, they appear automatically at the start of the accompanying count or rhythm. If spastic contraction or overflow occurs, the instructor puts the motion through passively. The patient is not allowed to execute the movement without assistance until the entire range of motion of the joint is smooth, but he is encouraged to assist in the movement in the proper rhythm.

Motion at the hip also can be considered to consist of three pairs of movements: flexion and extension, abduction and adduction, and internal and external rotation. The association of hip movements with count or rhythm is built up as in the case of the shoulder, and the transition from assisted passive motion to active motion is made. Finally the exercises are built up until the movements are those of locomotion. Attempts at balance are not allowed until the previous movements can be made smoothly without weight-bearing.

With slight modification this program of motor training is used for patients of each of the main types of cerebral palsy^(6b). In athetosis, as in spasticity, the training usually starts with reciprocal movements of the large joints. Because of incoordination due to athetoid motions of the erector spinae muscles, it is sometimes necessary to begin with muscles of the trunk rather than with those of the shoulder and hip. Passive reciprocation is taught and built up finally into active movements. Athetoid motions are decreased by reducing sensory stimuli. The patient must learn movement from the relaxed position without interference from the athetosis. At the beginning of any athetoid motion, the instructor should stop the patient's exercises and have him return to the position of relaxation.

In the treatment of overflow, relaxation does not play so large a part, as overflow occurs only when active motion is attempted. For this reason chief emphasis is placed upon the teaching of smooth, active, reciprocal movements. The acquisition of speed and amplitude, which tend to bring out the overflow, is often slow.

The treatment of primary incoordination does not require the teaching of relaxation. In pure incoordination the voluntary motor control is not involved; hence the teaching of reciprocal motion resembles closely the training of any awkward person in the performance of skilled acts. If joint sense is absent, the instructor begins with active motion, trying to make the patient conscious of movement at the joint. In incoordination the phase of passive exercise training is shorter than in either spasticity or athetosis.

The treatment of non-intention tremor is much the same as that of athetosis. The tremor is quieted by relaxation, and reciprocal motion is then started.

Advanced treatment of all of the main types of cerebral palsy consists of combining simple reciprocal motions, such as elbow flexion and supination, hip flexion and knee flexion, or abduction and adduction of both lower extremities. When such combinations are successfully carried out, more advanced ones are added.

Speech training follows the same lines of development as that of other muscle groups^(2d). In the spastic patient there is incoordination between the intercostal muscles and the diaphragm; as the patient expands his chest the diaphragm relaxes instead of contracting, and little change of air is available for voice or articulation. The instructor works for reciprocal motion and then for coordination, giving words such as "boost," "bounce," "leap," and combining them with a rhythmical count. The exercise is begun by having the patient breathe rhythmically while the instructor counts very slowly and quietly.

Since the diaphragm is the most fundamental part of the speech mechanism, a large part of the speech problem has been solved when the patient has learned conscious rhythmical breathing for speech. Spasticity of the larynx causes difficulty in modulating the volume of speech, whereas athetosis impairs the control of pitch. For athetosis training, chanting and humming are stressed.

Another major source of speech difficulty is the impairment of articulation. There may be no coordination between the lips and the tongue. The patient may substitute tongue sounds for lip sounds, or back tongue sounds for front; his spasticity or athetosis may be so severe that he can make no clear tongue letters. The muscles may be quieted by rhythmic counting. The instructor teaches one sound at a time according to a carefully planned phonetic system. A feeling for the intra-oral position at which each sound is made must be learned before the sound is articulated. The vowels, "ah, ay, ee, oh, oo," which are made chiefly by means of position of the lips and breath support, are taught first. Combinations are then made to form the diphthongs, such as "ah-ee," or "aw-oo". After the vowels have been learned, the vowel sounds should be stressed repeatedly. The position of consonants is taught and they are allowed to slip in. Diction is then developed by selected rhymes, and the timing and phrasing of speech improve as the feeling for sound is mastered.

The progress of speech training is slower with the spastic patient and more erratic with the athetoid. In both groups the same methods are followed, with the realization that in the spastic patient the stiffness comes from muscle block, and in the athetoid, the uncontrolled motion is superimposed upon voluntary movements.

For many patients in the spastic group surgical treatment is helpful. The operation itself, however, cannot be regarded as adequate treatment unless accompanied by careful and prolonged conservative measures, and in most instances the surgical treatment of these cases is an auxiliary to the more important motor training. Surgery is unquestionably contraindicated when the condition is a progressive one or when the patient possesses too little mental capacity to cooperate in the necessary post-operative muscle training. Immediate operation should never be done. A period of conservative muscle training and close observation should always be carried out first and this is often productive of clinical improvement which modifies and occasionally eliminates the surgical treatment.

With these limitations of the surgical treatment in mind the orthopedist can, in selected cases, choose beneficial operative procedures. Because of the great variety of operations which have been devised and the

many factors peculiar to each individual case, the choice of operation is difficult and calls for trained surgical judgment. Many operations which seemed at one time to have great promise have later proven unsatisfactory and have been virtually discarded. The Forster operation of section of the posterior nerve roots at their entrance into the spinal canal, and the Royle operation of sympathectomy have not found wide application.

Operations useful in selected cases of cerebral palsy include procedures upon the motor nerves, the muscles and tendons, and the bone. In our experience, one of the most valuable surgical procedures in the spastic group is the Stoeffel neurectomy. In this procedure the aim is not to paralyze the muscle group, abolishing its function, but to produce in the stronger muscles a loss of power sufficient to result in improved balance and hence increased capability for muscle training. This operation has been most successfully used on branches of the obturator nerve for adductor spasm, on sciatic nerve branches for hamstring spasm, and on the internal popliteal nerve for spasm of the plantar flexors. The same procedure is used at times in spastic pronation of the forearm and flexion of the wrist and may be applied to the motor nerves of any spastic muscle. At times a procaine injection in the motor trunk is used as a preliminary step to determine the effect of throwing certain muscles temporarily out of function. Alcohol injections are sometimes used to produce a paralysis of several months' duration, thereby facilitating training of the antagonistic muscles. It is difficult to estimate, however, the duration of the paralysis after the alcohol injection, and in most cases a Stoeffel operation is preferable.

Tendon and muscle operations include tenotomy, tendon lengthening, and tendon or muscle transplantation. Tenotomies and tendon lengthenings must be planned with the greatest of care to avoid an undesirable over-correction of the pre-operative condition. Lengthening of the Achilles tendon is rarely indicated. Occasionally one muscle of a group may be tenotomized to reduce the total group power; thus, tenotomy of the adductor longus muscle is often quite helpful, leaving the remaining muscles of the adductor group in better balance with the abductors. Muscle or tendon transplantation must be planned with great care according to the requirements of the individual

case. Before any operation upon tendon or muscle, adequate correction of the deformity must be carried out by the release of any severe fibrous contractures; and after operation, the patient must be immobilized in an over-corrected position, and the subsequent physical therapy must be meticulous.

Only in carefully selected cases are bone operations indicated. The most useful of these is subastragalar arthrodesis for varus or valgus deformity of the foot interfering with the gait and persisting despite conservative measures.

Summary

1. The major types of cerebral palsy—namely, spasticity, athetosis, incoordination, and tremor—are discussed, and the pathological changes and clinical differentiation of the several types are reviewed.
2. A clinic for children afflicted by cerebral palsy conducted by the Orthopedic Division of Surgery at the Duke University School of Medicine is described.
3. The motor education methods, speech training, and surgical procedures used in the treatment of cerebral palsy are outlined.

Diagnosis of the Normal Heart.—Many instances occur in which the physician appears reluctant to express the opinion that the heart is normal. The explanation of this attitude is found in several sets of circumstances. He may lack confidence in the accuracy of his observations or their interpretations. In spite of the absence of incriminating symptoms and signs, his reluctance to tender a positive opinion may be motivated by the fear that serious disease may be present yet undetectable. Again, in the absence of evidence of disease the physician is hesitant to commit himself to the verdict that the heart is normal on the presumption that if the heart is normal now, disease may supervene later and he may thus be censured for not having recognized the abnormality at an earlier time.

Indecision of this character is lamentable because it comprises that form of practice which contributes so generously to the ever-existent horde of cardiac neurotic patients who become so convinced of non-existent disease that their very existence becomes a horrible eternity of fear and uncertainty. Perfection in diagnosis is as yet not one of the attributes of mortal man and the physician must accept this premise, unhappy as it may be, and willingly accept the hazard of error when made in a conscientious attempt to help rather than to try to avoid such error by always leaving a portal of exit open at the expense of human anguish. Little doubt exists that more errors in diagnosis occur as results of such evasive methods than as the results of the method of conscientious conviction.—F. A. Willius: A Talk on the Recognition of the Normal Heart, Proc. Staff Meet. Mayo Clinic, 15:440 (July 10) 1940.

A PLEA FOR EARLY DIAGNOSIS OF CANCER

T. V. GOODE, M.D., F.A.C.S.

*Surgeon-In-Chief and Director
Long's Hospital*

STATESVILLE

The early recognition of cancer anywhere in the body is the most important factor in lowering the mortality in this disease. I believe that most mistakes that medical men make in any field, and particularly in this one, are due to the fact that they do not take the time or trouble to investigate. A surgeon with any considerable experience can recall many advanced cases of malignancy that had been overlooked earlier simply because the examining physician had not been thorough. Some wag has said that "the difference between the ordinary doctor and the specialist is a rectal examination." The crusade that has been going on for the past few years has made intelligent people cancer conscious, and many patients now come in for an examination to rule out this condition. This places a great responsibility upon the physician, and if there is any doubt about the true pathology in the case, he should either do a biopsy, if such is practical, or request a consultation. The public has been made so aware of cancer that there has been some improvement in the early diagnosis of the disease, but I believe that any further progress must be made by the practicing physicians.

We have been taught that the cancer age begins after 40. This is true, generally speaking, but in the past year I have seen two cases that show that cancer cannot be ruled out because of age. One was an inoperable cancer of the rectum in a man 31 years old who had been treated for hemorrhoids. Another was carcinoma of the stomach in a woman 35 years old who had been treated for anemia.

The great difficulty in the early diagnosis of carcinoma is that the generally accepted signs and symptoms of malignancy may not present themselves until the late stages, when the patient's chance of recovery is lost.

In order to bring out a few salient points in everyday methods of recognizing this

condition, we will consider in order the most common locations of cancer—namely, skin, breasts, gastro-intestinal tract, and genito-urinary tract. Approximately 95 per cent of malignancies occur in these locations. Realizing that the general practitioner is the man on whom the greatest responsibility falls in the early diagnosis of cancer, and that he does not have at hand all the equipment and assistance that some of us do, we are trying to pass out certain facts and findings that will at least arouse his suspicions enough to cause him to seek further aid in establishing the true pathology.

Skin

Malignant growths in the skin are usually recognized by sight and touch. Any lesion that does not heal by ordinary means in a reasonable length of time should be regarded as suspicious and should be excised with the cautery or knife and examined pathologically. It is always important to determine the type of cancer for the purpose of prognosis and therapy; squamous cell and basal cell carcinoma of skin, for example, behave in an entirely different manner.

Breasts

No examination of the female past 30 years of age is complete without a breast examination. Any lump in the breast should be removed and examined histologically, and treatment should be administered according to the type of pathology present. I would like to give a brief case report as illustration: In 1929 a young lady presented herself with a lump in her right breast. She was 33 years old at that time. We removed it, and pathological examination showed it to be a fibroma. In 1936 she returned for a routine health examination, and at this time I found a small movable tumor at the lower pole of her left breast. Considering what she previously had in her other breast, I thought she had another fibroma, and excised it. Pathological examination this time showed it to be carcinoma. I then did a radical mastectomy, and followed it by x-ray therapy. At the present time, four years later, she is perfectly well and has no evidence of any return of her trouble. The importance of a careful routine examination is brought out by the fact that she was completely unaware of this last tumor until we found it. The fact that she had had fibroma

in the other breast would have made it easy to consider this tumor of no consequence, and her opportunity of recovery would have been lost.

Genital Tract

The death rate in the United States from cancer in this situation is approximately 10,000 annually. It has been established⁽¹⁾ that 20 per cent of the women who die between the ages of 45 and 60 die of cancer; approximately one-third of these die with cancer of the uterus, and 90 per cent of the cases of cancer of the uterus begin in the cervix. It seems to me that there is a wonderful opportunity for us to improve our statistics. Carcinoma of the womb almost always begins with cancer of the cervix. These women are around the menopausal age, *usually*. Any unusual vaginal discharge, intermenstrual bleeding, or bleeding following intercourse, no matter how slight, deserves an immediate and thorough investigation. The early diagnosis of cancer of the cervix is based entirely on objective findings, with the exception of the symptoms mentioned above. Pain, anemia, cachexia, putrid discharge and profuse hemorrhage, are all late manifestations, and indicate that the cancer has progressed to a hopeless stage. Our practice is to examine every patient by palpation of the cervix and inspection with a speculum and a good light; and if there is the slightest suggestion of malignancy to take a section from the cervix for microscopic examination, and at the same time thoroughly burn the cervix with the actual cautery. We believe that the cautery is the best prophylaxis against future trouble, provided the malignancy has not already supervened. Some authorities state that they have never seen a cancer in a cervix that has been thoroughly burned. The etiology of cervical cancer, although unknown, must be directly related to irritation either by infection or childbirth, because only about 3 per cent occur in nulliparous women⁽¹⁾. I have had no experience with the Schiller test, but I do not think that at the present anything can supplant biopsy as a diagnostic procedure. Carcinoma of the body of the uterus, when it is primary in the fundus, presents the same train of signs and symptoms as cancer of the cervix, but cannot be seen.

1. White, J. William: Carcinoma of the Uteri Cervix, *Am. J. Surg.* 45:4 (July) 1939.

Gastro-Intestinal Tract

Cancers of the stomach are the most common of all malignancies. The death rate here is approximately 30,000 a year, and men are affected three times as often as women. Unfortunately, there are no classical early symptoms of carcinoma of the stomach. The textbook picture of an elderly male with vomiting, anemia malnutrition, asthenia, and epigastric mass, is not the picture of carcinoma of the stomach, but that of obstruction and widespread metastasis. Since carcinoma of the stomach may be relatively asymptomatic until the late stages, our only chance of early diagnosis is with x-ray and gastroscopic examination at the slightest disturbance of gastric function in patients approaching middle life. Someone has said: "Indigestion does not start after 40 in a man who has been able to eat anything he wanted until that time." Dr. Alvarez of the Mayo Clinic wrote a most interesting paper in 1931, entitled "How Early Do Physicians Diagnose Cancer in Themselves?"⁽²⁾ He studied 41 cases, and it is both interesting and depressing to note how these men who were trying to locate troubles in other people failed to realize that they had anything serious, until in many cases it was too late to do anything. This shows how insidiously cancer of the stomach comes on. The ideal plan would be for every man past 40 to have his stomach x-rayed routinely once a year; however, this is not practicable, and the best that we can do is to be on the look-out for any signs referable to the digestive apparatus. I remember a case I saw last year—a white woman, aged 35, who had a severe anemia. She had no free hydrochloric acid in her stomach, and no symptoms referable to her digestive tract. She had lost no weight, and because of her age and lack of digestive disturbance we treated her for anemia, although we were never able to make out the true type of anemia. Some-time later we became suspicious that probably there was something else behind her trouble, regardless of the fact that she still had no digestive disturbance. We made an x-ray examination of her stomach and found that she had a carcinoma of this organ. She had a gastric resection and is quite well so far, but we are very much afraid of a re-

currence on account of the extensive involvement of the stomach by the tumor mass. If we had recognized this at the onset of symptoms she might have had a better chance of cure.

Colon and Rectum

With carcinoma of the colon and rectum the diagnosis is easier, on account of the location. Seventy-five per cent of the cancers of the lower bowel occur in the sigmoid and rectum⁽³⁾, where at least 80 per cent are palpable either through the abdomen or rectum. Lesions here produce early symptoms, owing to the fact that the feces are solid and we get early signs of obstruction, bleeding and pain. It is more difficult to diagnose carcinoma of the right colon, because the feces are liquid in this situation, and bleeding and obstruction come on at a later period. The average age for this is the same as for carcinoma elsewhere, although it may occur in younger individuals. We saw a case last year in a man 31 years old who had plenty of symptoms and plenty of time, but his doctor had failed to put his finger in the rectum and was treating him for hemorrhoids. When we examined him the lesion was found to be inoperable.

Lahey⁽³⁾ has analyzed 300 cases of carcinoma of the colon and rectum, and found that 80 per cent showed altered bowel function. Blood in the stools occurred in 86 per cent of cases of carcinoma of the rectum, and in only 9 per cent of cases involving the right colon. Abdominal cramps or pain occurred in 86 per cent of cases of cancer of the right colon and in only 7 per cent of cases of carcinoma of the rectum.

Patients with altered bowel function, blood in the stool, or abdominal pain, deserve the use of all the facilities at hand to make a correct diagnosis.

Conclusion

Malignant conditions are very, very common, and our only method of combatting them successfully is by their early recognition and treatment.

3. Lahey, Frank H.: Neoplasms of the Cecum and Ascending Colon, *Am. J. Surg.* 46:3 (October) 1939.

2. Alvarez, Walter C.: How Early Do Physicians Diagnose Cancer of Stomach in Themselves? A Study of the Histories of 41 Cases, *Collected Papers of Mayo Clinic*, 28:44, 1931.

The Art and Science of Medicine.—The art of medicine and the science of medicine are not antagonistic but supplementary to each other. There is no more contradiction between the science of medicine and the art of medicine than between the science of aeronautics and the art of flying.

RECENT ADVANCES IN THE PREVENTION AND TREATMENT OF DISEASES OF THE CHEST

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Western North Carolina Sanatorium

BLACK MOUNTAIN

In the limited time at my disposal only a brief mention of the important advances in the prevention and management of diseases of the chest will be possible. Progress has been made along several lines. An important factor in the prevention of diseases of the chest has been earlier diagnosis, which has brought many more sufferers to the physician for treatment before their disease became so far advanced as to make them a menace to others. Along the lines of curative treatment, we now have much more to offer a patient with a chest lesion than we did ten or fifteen years ago. The subject of diseases of the chest has become such a broad one that it constitutes a real specialty, both in internal medicine and in surgery.

Tuberculosis

Let us first take up the progress that has been made in the common chronic disease of the lungs and chest—tuberculosis.

Great good has been accomplished by education of the public and the medical profession as to the need of repeated examinations and x-ray examinations of contact cases and of the general population, especially those in and above the teen age. Laymen and physicians have become more chest conscious. At the same time they know that when a diagnosis has been made, the next step is to secure early treatment of the disease in a sanatorium.

Another forward step has been the establishment of a great many more beds in institutions for the care of tuberculous patients. Since we are better equipped to find out more about the patient and his disease, he has more encouragement and is more willing to cooperate with the physicians connected with his case.

Diagnosis: The routine use of the tuberculin test, the fluoroscope, the x-ray, and the bronchogram in certain cases, together with the use of the bronchoscope at times, has been of untold value in making an early diagnosis of tuberculosis.

Treatment: We will first take up medical treatment. This still consists chiefly in bed rest or modified rest. No drug has been discovered that has any selective effect on the progress of the disease, and the drugs that have been used have only some effect on the amelioration of the symptoms.

Surgery constitutes the other great line of treatment that has been evolved for the tuberculous individual. It has been of incalculable value and will certainly continue to be until, as we hope, some chemotherapeutic agent will be discovered. The various surgical procedures in order of importance and frequency of use are as follows:

1. Intrapleural pneumothorax.
2. Interruption of the phrenic nerve, either temporary or permanent. This operation can be used alone in cases not suitable for pneumothorax or cases in which the lesion is so slight as not to call for the use of more radical treatment. It can also be used in conjunction with pneumothorax or with some other type of surgical procedure, such as thoracoplasty.
3. Pneumolysis. This procedure consists in cutting adhesions that prevent an adequate collapse of the lung after pneumothorax. Following this operation the lung is usually better collapsed, and pre-existing cavities are frequently closed.
4. Pneumoperitoneum. By this procedure we inject varying quantities of air into the peritoneal cavity and thus cause elevation of the diaphragm and restriction of its motion. More rest to the diseased lung is thus produced. This procedure is used particularly in cases in which other surgical methods of collapse have failed, and in a small percentage of cases good results are obtained. In order to enhance the effects of this procedure, a previous interruption of the phrenic nerve on the most diseased side should be carried out, as the paralyzed side of the diaphragm will rise to a much higher level than the leaf of the diaphragm that is functioning.
5. The major surgical procedure, that of thoracoplasty, which can be either partial or complete.
6. Certain selective and less often used

procedures, such as extra-pleural pneumothorax, paraffin pack, and very occasionally lobectomy and pneumonectomy. These last two surgical procedures are very seldom applicable to tuberculous patients.

The bronchoscope, so useful as a diagnostic aid in other diseases of the chest, can also be used in the treatment of tuberculosis. Through this instrument local treatment of tracheobronchial ulcerations can be carried out with the cautery or with such preparations as silver nitrate. Constricted areas resulting from the healing of tuberculous ulcers and causing partial stenosis of the bronchi can be dilated through the bronchoscope. Frequently, non-tuberculous complicating diseases of the lungs can be discovered through the bronchoscope and differentiated from the tuberculous lesions which are present.

Non-Tuberculous Diseases of the Chest

Diagnosis: Great advance has also been made in the diagnosis and treatment, both palliative and curative, of the non-tuberculous pulmonary lesions. Early diagnosis is as important in non-tuberculous lesions as in tuberculous ones, and the same procedures are just as useful in the determination of the nature and extent of these lesions. In our search for early tuberculosis lesions we find in many instances non-tuberculous lesions of a nature and extent amenable to treatment both by medical and surgical means.

The time-honored methods of diagnosis, such as history taking, physical examination, use of the fluoroscope, x-ray, bronchograms, and various laboratory tests, especially the routine examination of the sputum, are still as important as ever in this class of diseases. I would like to emphasize the great importance of a routine study of the sputum in every patient with a history and symptoms of chest disease—provided, of course, that the patient has sputum. We see many patients who have been treated for various conditions over a long period of time without an exact diagnosis, because the physician overlooked the sputum examination.

The bronchoscope is of great value in non-tuberculous diseases of the chest. Any case in which the diagnosis remains obscure after all other methods have been used and found wanting, should certainly be examined by

bronchoscope without delay. The diagnosis of many an obscure lesion is established only after the use of the bronchoscope and the removal of a section of tissue for pathological examination.

The punch or aspiration biopsy is a rather simple procedure, and material aspirated through the large bore needle may give very definite findings, especially in cases of pulmonary malignancy. At times an exploratory thoracotomy is indicated. If thoracotomy shows the lesions to be amenable to surgery, the operation can be carried out at that time, whether it means an incision of a suppurative process, excision of an offending mass, removal of a lobe or lobes of the lung, or even pneumonectomy.

Treatment: The medical treatment of most chronic non-tuberculous pulmonary lesions, such as bronchiectasis, chronic lung abscess, and malignancy, is usually disappointing. Recently great advances have been made in the chemotherapeutic treatment of many of the acute non-tuberculous lesions. The chemotherapeutic agents, such as sulfanilamide, sulfapyridine, preparations of arsenic, the iodides, and thymol, constitute almost a new era in the treatment of non-tuberculous pulmonary lesions. I feel that as time goes on other agents will be discovered, not only for the treatment of these acute lesions, but also for some of the chronic ones.

We now come to the surgical treatment of non-tuberculous lesions. Many of these, especially the sub-acute and chronic ones, can now be successfully treated by various surgical procedures developed and perfected in the last few years. The use of the bronchoscope has constituted a great advance in their treatment. Frequently by the dilatation of an obstructed bronchus or the removal of a foreign body or a tumor mass, better drainage is instituted and there is a re-inflation of the atelectatic portion of the lung distal to the obstruction. This is often followed by clearing up of the process, especially if it is a rather acute or a sub-acute one. The operation of thoracotomy has been of great value in the treatment of suppurative processes involving the lungs or pleura, or both, and can often be used as a supplement to the drug treatment of such cases. Lobectomy and pneumonectomy have been so perfected that they are now relatively safe. Many cases of chronic lung abscess, bronchiectasis, and lung tumors, benign and

occasionally malignant ones, can now be treated by these surgical procedures.

Anesthesia

One of the important factors in decreasing the mortality incident to these various surgical procedures has been the discovery of new and better anesthetics. Cyclopropane is most satisfactory, since it can be given with a high oxygen content. We have also basal anesthetics, such as avertin, which can be used in conjunction with the administration of the various gases.

The safety of anesthesia and the low percentage of deaths from its use are also due to the fact that we now have trained anesthesiologists. I feel that an anesthesiologist should be a physician who has thoroughly perfected himself in the science and art of the administration of anesthetics. The surgeon who can have on his team a man who is not only a specialist in the administration of anesthetics, but is also a good doctor, is relieved of a great deal of worry, and the danger to the patient is considerably lessened. A good anesthesiologist is necessary to a satisfactory operating team. Surgeons are now demanding well trained and experienced anesthesiologists.

Conclusions

Although great advances have been made in this field, much more needs to be done. While many of these diseases are amenable to treatment, a great many are still beyond the pale of any effective therapy. Again, due to carelessness of physician or patient, or both, many diseases are not diagnosed until they have become too far advanced to be suitable for any treatment. Many of the surgical procedures are very serious, and some are mutilating. While the mortality has been greatly reduced, it is still uncomfortably high.

We are still seeing a great many advanced cases of tuberculosis and of non-tuberculous diseases of the chest, and we still do not have enough beds. We need to educate the public more as to the value of early diagnosis and proper treatment over a long enough period of time.

"Stuck" Syringes.—A simple and effective method of separating a "stuck" syringe is to place it in a container of concentrated nitric acid completely covering the syringe. Leave it immersed for a variable length of time, a week or two usually being sufficient. — W. J. Nungester, in *Science*, 92:516 (November 29) 1940.

SURGICAL TREATMENT OF BENIGN RECTAL STRICTURE

(Lymphogranuloma Venereum)

GEORGE T. WOOD, M. D.

HIGH POINT

Lymphogranuloma venereum has been known to the medical profession for some time, and during the past decade many articles have appeared in the literature describing its relationship to the benign rectal strictures. Prior to the introduction of the Frei intracutaneous test in 1925, non-malignant and non-traumatic strictures of the rectum were thought to be due to gonorrhea, tuberculosis or syphilis. The case here reported is one of benign rectal stricture of several years' duration, with a positive Frei test. The case was complicated by a luetic infection.

Incidence

Formerly this condition was thought to be a tropical or semi-tropical disease, but in recent years cases have been reported from all parts of the world. Males are probably more often infected than females, but this difference may be more apparent than real, owing to the superficial lymph drainage of the initial lesion in the male.

Pathology

Lymphogranuloma venereum is caused by an ultramicroscopical virus which is transmitted during coitus. After an incubation period of one week a transient, painless ulceration appears on the genitals. Several weeks later the lymph nodes draining the initial lesion become edematous and the lymphoid tissues undergo hyperplasia, with fibrosis and abscess formation. The lymphatic involvement varies with the sex of the patient and the location of the lesion. The following excerpts from an article by Lee and Staley⁽¹⁾ describe the anatomy of these parts.

In the male, "The glans penis and the prepuce drain primarily to the inguinal nodes. These have connections with the iliac nodes above. An occasional lymph vessel leads directly through the femoral canal and abdominal muscles from the glans penis and prepuce to the iliac and hypogastric lymph nodes. A number of anastomoses are present between the lymph vessels of the glans penis and the prepuce and the skin of the

1. Lee and Staley: Inflammatory Strictures of the Rectum and Their Relationship to Lymphogranuloma Inguinale. *Ann. Surg.* 100:486-495, 1936.

scrotum, and there is a rare direct connection with the anal canal. The skin of the scrotum drains chiefly to the inguinal nodes. The abundant connections of the skin of the scrotum with the anal region are of great importance, as this connects indirectly the penis and the cutaneous lymphatic network of the anus."

In the female, "The clitoris and the vulva drain principally to the inguinal nodes. As in the male, indirect trunks lead to the iliac and hypogastric nodes. The lymphatics of the posterior portion of the vulva have extensive connections with the cutaneous lymphatic network of the anus. In both sexes many communications exist between this anal network of the lymphatic and Gerota's nodes at the ano-rectal junction. The cutaneous and lymphatic network is approximately two centimeters within the anal orifice and Gerota's nodes are four centimeters higher. The connections between the lymphatic vessels and the posterior vaginal wall and the anus are quite free. The lower third of the vagina drains chiefly to the iliac and hypogastric nodes, and the uterus to the pre-aortic, utero-vaginal, superior hemorrhoidal and sacral lymph nodes."

This description explains the high incidence of inguinal adenitis and the infrequency of rectal complications in the male and the relative frequency of rectal stricture in the female, with a low incidence of inguinal bubo. One of the early complications in the female is a proctitis following the lymphatic involvement. Recurrent perirectal abscess, fistulas and hemorrhoids are frequent complications.

Case Report

The case here reported is of a married woman 32 years of age, the mother of five children. Her chief complaint was severe constipation and purulent rectal discharge.

According to the history she gave, the onset of her present illness was in April, 1927, when she developed a perirectal abscess during pregnancy. This was incised and drained, and it healed without the formation of a fistula. One year later she developed another abscess, which healed after drainage. The same thing happened in 1930, when the abscess opened spontaneously. From that time until the present she had had non-bloody discharge from the rectum, associated with increasing constipation. She used saline laxatives constantly, and even then a great deal

of straining was necessary for defecation. From 1927 until 1936 she could not do much work; she lost weight and strength, and never felt well. She consulted me first in October, 1936, at which time she complained of pain near the anus and severe constipation. The pain was due to a perirectal abscess, the first she had had since 1930. This was opened and drained.

There is nothing significant in the past history except the syphilitic infection. Her husband had a primary lesion in 1928 and received some treatment. The only clinical indication that she had obtained the infection was a macular rash in 1933. Active treatment was started in 1936 by Dr. L. W. Holladay and continued until 1939. The blood and spinal fluid Wassermann tests were negative.

The patient was a rather thin, poorly nourished woman of 30 years. The physical findings were entirely negative except for a perirectal abscess, and, upon digital examination of the rectum, a very tight annular stricture at the anorectal juncture, the lumen of which did not exceed 1 to 1½ cm. The mucosa over the stricture was ulcerated.

Treatment

The various forms of medical treatment for rectal strictures have been generally unsatisfactory, including the use of antimony and potassium tartrate, fuadin, foreign protein, Frei antigen intravenously, and a host of other preparations. Operative procedures have varied from simple dilatation of the stricture to the abdomino-perineal resections. The treatment of this condition has recently been modified by Warthen². His technique was used in this case.

Most strictures of this type are located 3 to 8 cm. from the anus, and it is well to remember that the peritoneum of the cul-de-sac is located 5.5 cm. above the anus in women. If dilatation is attempted in these annular fibrous strictures, a tear may take place which, if anterior, will penetrate the peritoneum and produce a peritonitis. Several deaths following dilatation have been reported, even when the mucosa of the rectum was not torn. These were perhaps caused by infection which was massaged through the bowel wall, or to rupture of an abscess in the free peritoneal cavity. It was to obviate these dangers that Warthen devised an operation which would permit safe

2. Warthen, Harry, in *Virginia M. Monthly*, 66:26 (January) 1939.

postoperative dilatation of the stricture without risk of peritonitis. To attain this end a colostomy was combined with the chemical and mechanical obliteration of the cul-de-sac. The surgical technique is as follows: Spinal anesthesia is injected, and with the patient in an extreme Trendelenberg position, a left paramedian incision is made. Any pathologic tissue of the pelvic organs is removed. The peritoneum lining of the cul-de-sac is painted with one-half strength tincture of iodine, applied only to the area which will be covered by sutures. The cul-de-sac is then obliterated from below, by purse-string sutures which include the lateral rectal wall and the parietal peritoneum in the pouch of Douglas. These sutures are continued upward until the sigmoid is attached to the posterior peritoneum of the broad ligaments. Thus the cul-de-sac is entirely obliterated by sutures. The chemical irritation caused by the iodine will encourage the adherence of these parts. The next step is to make a temporary double-barrelled colostomy through a left McBurney incision. The loop of the sigmoid is supported on a glass rod, and the bowel is opened later (after forty-eight hours or more) with a cautery.

Postoperative Care

After operation hot irrigations are given through the lower loop, and in a short time the rectal ulceration subsides, and the stricture begins to soften. In our case finger dilatations were begun in the fifth week, and have been carried out three times weekly. It was surprising how little discomfort dilatations caused the patient. There has been a marked improvement in her general health, and she is able to control her colostomy opening with the proper diet. I do not know how long it will take to complete the dilatations of the stricture, or when the colostomy can be safely closed. Warthen had not closed the colostomy in any of his cases at the end of eighteen months. With the patient in the lithotomy position, the stricture can be more easily dilated if the index finger of the left hand placed on the posterior vaginal wall is used to pull the stricture over the finger inserted in the rectum. It was rather surprising to see how quickly the tissues around the stricture softened after diversion of the fecal current.

Summary

A safe and easy method of dealing with non-malignant rectal strictures has been described. After a colostomy is performed and the fecal current diverted, the rectal infection subsides, and the obliteration of the cul-de-sac permits early and frequent dilatations of the stricture, without the danger of fatal peritonitis. Non-malignant and non-traumatic rectal strictures are the result of lymphogranuloma venereum, and are not due to syphilis or gonorrhea. This case was given antileptic treatment for two years without improvement in the stricture.

There is always a danger of stricture following lymphogranuloma infection of the rectum. When the proctitis is severe, and the Frei test is positive, it is our opinion that a colostomy should be made, with the chemical and mechanical obliteration of the cul-de-sac.

A Frei intracutaneous test should be made in all cases of rectal stricture.

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May, 1941

DR. VAN ETTEN

In a simple but impressive ceremony the corner stone of the Bowman Gray School of Medicine of Wake Forest College was laid on April 16. At 7 p. m. the dinner meeting of the Eighth District Medical Society was held on the roof of the Robert E. Lee Hotel. The high lights of both occasions were the addresses of Dr. Nathan B. van Etten of New York, president of the American Medical Association. The first of these addresses is published in this issue of the NORTH CAROLINA MEDICAL JOURNAL; the other will follow soon. They will repay careful reading and rereading, for they are not only full of philosophical common sense, but are models of literary expression.

Those who did not meet Dr. Van Etten and hear him speak in Winston-Salem can form some idea of the man from these addresses. An admirer of a noted preacher once gave as the reason for the effectiveness of his sermons that "there is a whole lot of man behind what he says." Friends of Dr. Van Etten know that this can be just as truly applied to him. His delightful person-

ality made for him a multitude of new friends in North Carolina, who hope that his first visit to the state will be followed by many others.

We can not all, of course, follow the neighborly custom of returning his visit; but doubtless he would appreciate it if as many as possible would do so by attending the Cleveland meeting of the American Medical Association, June 2 to 6. All who go will be well repaid; for under his leadership we may be assured of a great meeting.

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A GENERAL PRACTITIONERS' SECTION FOR CONNECTICUT

It is possible to be so far in advance of the procession as to be forgotten by one's followers. In the *Connecticut State Medical Journal* for April, a letter from Dr. Herrman S. Cutler outlines plans for the organization of a general practitioners' section at the annual meeting of the Connecticut State Medical Society in May. Dr. Cutler states that the movement was initiated by "the general practitioners of New Haven, following the example set by similar groups in Westchester County, New York, and in Wayne County, Michigan. . . . This was undertaken with the approval of the State Medical Society and with the cooperation of the Secretary of the Society."

When the *New York State Journal of Medicine* for November 15, 1940, reported the formation of a general practitioners' section for Westchester County, this journal offered a comment which it seems pertinent to repeat in part now:

"The NORTH CAROLINA MEDICAL JOURNAL would like to recall, in order to keep history straight, that a general practitioners' section of the Medical Society of the State of North Carolina was organized in 1937, and that it has had the largest attendance of any section of the society. To go still further back, Dr. J. M. Northington, editor of *Southern Medicine and Surgery*, established a Department of General Practice in that journal in July, 1931."

The NORTH CAROLINA MEDICAL JOURNAL wishes the best of success for the general practitioners of Connecticut, and predicts that the new organization will rapidly become the most popular section of the society.

MEDICINE—TRADE OR PROFESSION?

After two months, the suit brought by the United States Government against the American Medical Association for "operating in restraint of trade" ended in a weird verdict. The American Medical Association and the District of Columbia Medical Society were found guilty, but all the individual defendants were found not guilty. It is hard to follow the reasoning—if any—of the jury.

Since the American Medical Association has been found guilty of operating in restraint of trade, medicine—one of the three original learned professions—is now legally a trade. The labor unions have been exempt from the anti-trust laws. The *Chicago Tribune* for April 7 points out that "The anti-trust conviction may impress upon the members of the A. M. A. that when they organized they took out the wrong kind of charter. They should have applied to William Green or John L. Lewis. So equipped, they would not have been reduced to refusing to practice in the same hospitals with a physician who signed up with Group Health. Dr. Morris Fishbein could just have gone around some evening and broken the wrong guy's fingers with a blackjack, an operation that does a surgeon no more good than it does a musician, and Mr. Justice Frankfurter would have told Thurman Arnold not to get himself all wrought up over a passing moment of animal exuberance.

"A good broad A.F.L. or C.I.O. charter would solve a lot of the medical profession's economic problems. Its members would not have to worry about overproduction of doctors. They could just close their membership rolls and have some of their members, sitting on the state and local examining boards, prosecute the newcomers for practicing without a license.

"Draft boards wouldn't be asking physicians to give their services free for examination of the draftees. All the chest thumping in charity wards would be done at the union scale and any nonunion medico who tried to cut in on the business would have to pay a \$1,000 initiation fee. Ladies expecting offspring would have to be careful that the labor pains did not start after 4 p.m. on a Friday; otherwise Papa would have to pay double time for a week-end delivery."

Such an idea, of course, is too ridiculous to be entertained for a minute by members of the American Medical Association; but it does cause one to think seriously about the depths into which democracy can descend.

* * * *

SUGGESTIONS TO MEDICAL WRITERS

A member of our editorial board, who is himself a gifted and experienced writer, has offered the following suggestions to medical writers:

Far be it from us, by giving unsought advice or gratuitous criticism, to affront those who contribute to the literature of medicine. It is a fact, however, that medical writers do have faults. They are chiefly faults of commission, not of omission. With a view to calling attention to some glaring blemishes, the following suggestions are offered in their terse and simple form for what they may be worth:

1. *Begin where your subject begins and stop where it leaves off.* In other words cut out the introductions and the perorations. The world is suffering constantly from the pain caused by people who will not come to the point. Avoid the statistical-bureau method on the one hand and shun the exhaustive and exhausting encyclopedic style on the other. While running from the choppy sentences of Carlyle, see that you plunge not headlong into Macaulay's rhetorical periods.

2. *Do not go back every time to Hippocrates and Galen.* We have troubles of our own. A paper on a special theme is not supposed to be a treatise on medical history, though that in itself is a most fascinating subject. When this is attempted, even in part, the article is apt to be thrown away before being finished and condemned as "re-hash". If you look up the matter, you will find that somebody has already arranged and classified everything and rendered due credit to Aesculapius. Find out all you can about your subject, but include only what pertains to the topic in hand. Never report a case as rare until you make certain that it is rare.

3. *Remember that the harder it is for you to write, the easier it is for the reader to read.* Turning it off the assembly line or scribbling it down with facile pen sounds well, but teasing it out with a sharp dissector is necessary for its perfect digestion. Prune, polish and pickle before you publish.

PARATHYROID ADENOMA

It is true that the great majority of ailments which bring patients to physicians are of the so-called "common garden variety", and herein lurks a danger; for the preponderance of the usual may easily blunt the practitioner's keenness for the recognition and detection of the rare and unusual. Such an uncommon condition is adenoma of a parathyroid gland, producing the intensely interesting picture of hyperparathyroidism. This syndrome should be familiar to all; for the most brilliant results follow surgical therapy, and great disability, and even death, is the price which the patient pays for an error in diagnosis. It may be remarked in passing that this syndrome illustrates exactly the only type of "preventive medicine" that the practitioner really can practice; by his efforts he can prevent the occurrence of disastrous consequences.

The absorption and proper handling of calcium is a very vital metabolic process. Vitamin D, or calciferol, is generated in the skin by the action of actinic rays upon the lipid, ergosterol, and this vitamin governs the intake of calcium from the intestines. Milk is the most valuable source of calcium. After entering the blood, calcium is deposited largely as calcium phosphate in the bones and teeth, from which great storehouses it is supplied to the body in the needed amounts through the action of the hormone produced by the four parathyroid glands, called parathormone. The liberation of calcium from its stored form as calcium phosphate is accomplished by the action of the enzyme phosphatase. A parathyroid adenoma produces an excess of parathormone; too much calcium is drained from the bones; and decalcification with the production of multiple bone cysts may result. The patient in the beginning complains of lassitude, great weakness, and pain in the bones. Unless the adenoma is removed, the bones may fracture upon slight effort, and severe damage to the organs, especially the heart, blood vessels and kidneys, is produced by the deposition of "metastatic" calcium.

If the condition is suspected diagnosis is not very difficult. The calcium in the blood is found elevated above the normal range of 9 to 11 mg. per 100 cc.; the bones may show decalcification; and, in probably half the cases, a characteristic deposition of calcium in the pyramids of the kidney is shown by x-ray study⁽¹⁾. Phosphatase is greatly increased in the blood.

Such fascinating problems as hyperparathyroidism furnish a welcome relief from the common run of disease, providing a diagnostic thrill for the physician, and, much more important, bringing relief to the patient from a disabling and dangerous disease.

1. Hyperparathyroidism Due to Parathyroid Adenoma, With Death from Parathormone Intoxication, *Am. J. M. Sc.* 197:85, 1939.

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"DOCTORS SCORE AGAIN"

An editorial in the *Winston-Salem Journal*, under the above caption, comments on an article by Paul de Kruif in the *Reader's Digest*, which tells of the work done by Dr. Tom Spies on pellagra and other deficiency diseases. The concluding paragraphs of the editorial should be of interest to those who would substitute European systems of political medicine for the American system:

"Unbelievable as the work of Dr. Spies and his colleagues may appear, it is there for all to see. Countless thousands are alive today, and countless millions will live longer in the future, thanks to the men of medical science. It is a great tragedy that their work throughout the world is periodically halted by social strife, wars and bitter political differences.

"The outstanding achievements of American medicine have been made possible under a governmental philosophy which allows full play to the talents of each individual. In return for these privileges inherent in what we like to call the free enterprise system, American medicine gives prodigiously to all the people, regardless of class, color or creed. We should consider well and long before making any fundamental change either in this system or in the institution of private medicine."

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

DR. ELBERT L. PERSONS (Reading the Clinical Summary): This 40 year old colored housewife was first seen in the Medical Out-patient Dispensary, complaining of shortness of breath of six months' duration.

The *family history* was entirely non-contributory. Her first husband died at 46, after a marriage of nineteen years, of "heart disease". Her first pregnancy, when she was 18, was carried to term, but the child died at 2 months of pneumonia. Since that time she had carried two pregnancies to the seventh month, with spontaneous delivery of still-born infants, and had had three miscarriages at three months. Her second marriage, four years ago, was to a healthy man now 49, and her last miscarriage was one and one-half years ago. She did not know if either husband ever had a blood test or had taken antiluetic therapy.

Past History: Her general health had been good. Aside from the exanthemas she reported only one illness, at the age of 20, when, after being out all night in the rain, she developed an explosive outbreak of "inflammatory rheumatism" during which all the joints were painful at one time, although only the ankles swelled. Recovery was rapid, leaving no disability.

The review of systems showed frequent headaches, no visual symptoms (except that she had needed glasses for many years), and no cardiac or respiratory symptoms. For the past four or five years she had had attacks of "indigestion" for which soda was taken after meals. She had taken laxatives habitually. There had been no jaundice or colic and no nocturnal symptoms.

There were no urinary symptoms and the menses had been normal and regular.

Until five years ago she had been a school teacher, and she was "always rather nervous". Her weight had been about 180 pounds.

Present Illness: Although actual disability had been present for approximately six months, relevant symptoms seemed to have started four or five years ago, when, for about two years, she had menorrhagia.

About two years ago she was examined by a physician and told that she had an abdominal tumor. No treatment was advised, and the menses had been regular since that time, with a thirty day interval, four or five days of flow, and no intermenstrual bleeding, although some pain had been present.

For about two years she had been bothered by shortness of breath on exertion, and easy fatigue and palpitation. Her weight decreased to 146 pounds, and for the past year the ankles swelled at night, in association with enlarged veins. She stated that there had been no increase in symptoms during the two or three year period before February, 1940, when she had "flu" with cough, swollen lips and "fever blisters", and generalized skin rash. Since then she had had increasing shortness of breath on exertion, weakness and fatigability, and palpitation. She had taken a proprietary powder containing bromide frequently for "constant headaches", and had noted a pustular rash on the face, shoulders and back.

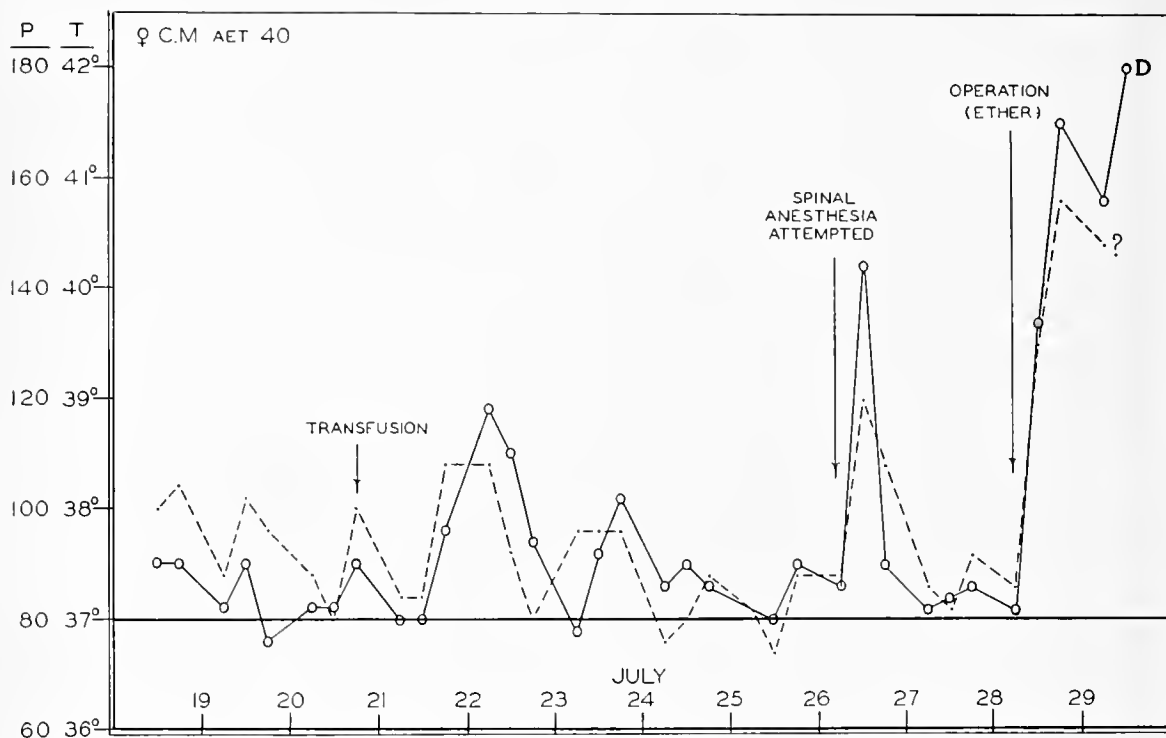
No blood tests of any kind had been made, and there had been no recent treatment.

Physical Examination: The temperature was 36.8 C.; pulse, 80; respirations, 18. Her development and nutrition appeared normal, with nothing to suggest recent weight loss. The skin was normal except for an acneform eruption over the face, upper chest, and shoulders, with some scarring and pigmentation. The head, eyes, ears, nose and throat were normal except for poor dental hygiene. The neck was supple, with no glandular enlargement and no venous distention with the patient lying flat upon the table. The breasts were normal, expansion of the thorax was good, and the lungs were clear.

The heart was enlarged to the left by percussion. The sounds were of good quality and normal rhythm. There was a systolic murmur loudest at the second left interspace. The blood pressure was 150 systolic, 85 diastolic.

The abdomen showed no enlargement of the liver and spleen. The left lower quadrant was filled by a mass extending two-thirds of the way to the umbilicus, which was movable without pain. On pelvic examination this was thought to be an irregular uterine fibroid. The extremities were normal and the neurological examination was negative.

The hemoglobin was 50 per cent; the red cell count 3,730,000. The Wassermann and



Kahn tests were negative; the urine was normal.

The patient was transferred to the Gynecologic Dispensary and was then admitted to the hospital on that service, where the physical findings and the hypochromic anemia were confirmed. Sedimentation rate was 6 mm. per hour.

As indicated on the temperature chart, the patient was given a transfusion on the third hospital day, which raised the hemoglobin value to 67 per cent. This was followed by a febrile rise, and a medical consultant was called. Seeing her on July 24, he found no change in the cardiac findings; the blood pressure was 140 systolic, 70 diastolic; and there was no evidence of an acute infection. A catheterized urine specimen was normal.

A dermatologic consultant reported a seborrheic type of skin, but thought the appearance of the skin lesions suggested a combination of bromidism and self-inflicted trauma.

The seventh and eighth hospital days were uneventful, and on July 27 the patient was taken to the operating room, and an attempt was made to produce spinal anesthesia. This was unsuccessful and was followed by a sharp rise in temperature to 40.2 C. and in the pulse rate to 120. The tenth hospital day was again uneventful, and on July 29

supravaginal hysteromyomectomy, bilateral salpingo-oophorectomy, and appendectomy were performed under ether anesthesia. The entire procedure was well tolerated, the blood pressure remaining around 140 systolic, 80 diastolic, the pulse ranging from 110 to 130.

Within two hours after the operation the patient's temperature was 39.6 C. and there was marked restlessness and discomfort. Her temperature continued to rise. Fourteen hours after the operation it was 41 C., and auricular fibrillation with a radial pulse rate of 160 was noted. Digitalis and stimulants were of no value, and the patient expired twenty-one hours after operation, after a short period of restless coma.

Discussion

The preoperative gynecologic findings and the type of operation described allow us to discard any idea that abdominal exploration revealed anything more than a relatively innocuous type of pelvic tumor or chronic inflammatory lesion, probably the former. The patient's death must have been due to some extrapelvic disease which had not been recognized, or to a postoperative complication.

The record is distinctly against a postoperative complication associated with the anesthesia, which was apparently uneventful, and there are no indications of hemor-

rhage. Postoperative infection must be thought of, but we do not expect such extreme febrile reactions so soon after operation in any of the common operative complications.

The clinical picture described seems compatible with that of fatal "heat stroke", and it may be well to recall that the latter weeks of July were extremely hot in Durham. One of the effects of ether anesthesia, moreover, is temporary disorganization of the heat-regulating mechanisms. Such severe thermal reactions may occur also in brain injuries and after operations on the brain, but there are no data to support such an explanation here.

It is worthy of careful note that auricular fibrillation was reported seven hours before death. While this may occur spontaneously in people who are not seriously ill, it is uncommon as a terminal event in febrile illnesses where the heart has been previously normal. We do not expect it, even as an agonal phenomenon, in pneumonia, meningitis, peritonitis or even uremia, and its appearance suggests some preexisting load on the heart, especially that due to hyperthyroidism. It is probably safest to regard auricular fibrillation which is not paroxysmal in type and which is not associated with signs of structural disease of the heart as due to hyperthyroidism until the condition can be definitely eliminated.

With this in mind, a review of the clinical course makes it seem highly probable that the patient had a masked form of hyperthyroidism and that the events following operative intervention represent a "thyroid crisis" which was fatal. Since examination of the neck revealed no nodules, we are probably dealing with a diffuse hyperplasia of the thyroid.

Clinical Diagnosis

Toxic diffuse goiter with acute postoperative thyrotoxicosis ("thyroid crisis") following laparotomy.

Pathologic Report

DR. SPRUNT: The diagnosis on the material removed at operation was fibromyoma of the uterus; adenomyosis; minimal chronic follicular salpingitis; endometrial polyp. As stated by Dr. Persons these could have contributed little, if anything, to the patient's death.

At autopsy a diffusely enlarged thyroid,

weighing 63 Gm., was found. We think of the normal weight of the thyroid as about 30 Gm. The thymus weighed 50 Gm., and was therefore greatly enlarged for the age of 40. The thyroid on section had a characteristic diffuse beefy appearance. The other organs grossly were essentially normal.

Microscopic sections of the thyroid show the picture of a typical exophthalmic goiter. The thymus is also hyperplastic. In the liver there is considerable fat and some slight necrosis of the hepatic cells.

Anatomical Diagnosis

Exophthalmic goiter; diffuse necrosis of the liver with fatty change; persistent enlarged thymus; edema of the lungs; pleural adhesions; fresh suprapubic surgical incision; fibroids of the uterus.

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

Presentation of Case

Mrs. M. L. M., a white woman 46 years of age, entered the hospital for a cholecystectomy, complaining of pain in the abdomen.

The patient's illness goes back to about fifteen years ago, when she first began to have epigastric pain. This pain was occasionally associated with nausea and vomiting. The patient stated that the pain came on thirty minutes after eating and could be relieved by soda, food or various types of medicine, but would recur when the effects of the food or medicine had worn off. Nausea and vomiting occurred from time to time and gradually became more severe. The pain frequently awakened her in the middle of the night. About two years ago the attacks of pain became more severe and the nausea more frequent. She was told that her appendix might be causing her trouble, and the appendix was removed without relief at another hospital. The pain began to extend beneath the right costal margin, and later extended frequently beneath the right shoulder blade. The vomitus was green and bitter. The patient had never noticed any icterus or itching of the skin. She had not been bothered with gas and had not omitted fried or greasy foods from her diet. She had never noticed the character of her stools.

Six weeks before admission she had a cholecystographic examination. The gallbladder was not visualized, and no stones were seen. During the two weeks previous to admission the pain became so severe that she decided to have an operation.

Thirty-five years ago the patient had typhoid fever. She constantly took medicine for constipation, and occasionally had frequency and burning associated with the attacks of pain in the epigastrium. Otherwise her past history was negative.

The patient was a well developed, well nourished white adult female lying quietly in bed and not appearing acutely ill. The heart appeared normal in size. The rhythm was regular and no murmurs were present. The abdomen was slightly obese, and an old midline scar was present. There was a good deal of tenderness and rigidity in the epigastrium and right upper quadrant, and slight tenderness in the left lower quadrant on deep palpation.

A catheterized specimen of urine was straw-colored, slightly cloudy and acid. The specific gravity was 1.015. Albumin and sugar were not present. There were 2 to 4 white blood cells, 1 or 2 red cells, a few epithelial cells, and an occasional hyalin cast in the sediment. The red count was 5,200,000, the hemoglobin, 14½ Gm.; the white count was 7,800, with 1 per cent eosinophils, 10 per cent stabs, 56 per cent segmented cells, 28 per cent lymphocytes and 5 per cent monocytes. The nonprotein nitrogen was 48.2 mg. per 100 cc. On admission the temperature was 100.4 F. and the pulse was 98.

The next day the patient rested comfortably. At 3 o'clock on the morning of the third hospital day the patient was awakened by a very severe pain in the epigastrium which she insisted was the most severe pain that she had ever had. She thought she was going to die. She was nauseated, and vomited 150 cc. of brownish fluid. She complained that her back ached. Her pulse was weak and thready and was thought to be about 90. She was given morphine, nitroglycerin and coramine, and passed the remainder of the night in a very uncomfortable state. (This was thought to a "heart attack".) At 6:45 a.m. her pulse was 110. Her temperature at 8 a.m. was normal, but her pulse had gone up to 116. A blood count at this time showed 13,750 white cells, with 1 per cent juveniles, 10 per cent stabs, 60 per cent segmented

cells, 28 per cent lymphocytes and 1 per cent monocytes. The patient continued to complain of severe pain in the epigastrium. At noon her blood pressure was 110 systolic and 74 diastolic. Her temperature was 99.4 F., her pulse 108, and her respirations 20. She continued to be in pain, and at 8 p.m. her temperature was 100.6 F., her pulse 100, and her respirations 24. She was given an enema, but was unable to expel it. It was siphoned back almost clear, with small strings of fecal matter. The patient passed a fairly quiet night with 3 grains of nembutal, and felt considerably better in the morning. She was operated upon at 8 a.m. on the fourth hospital day.

Discussion

DR. EDGAR BENBOW: This patient's epigastric pain was occasionally associated with nausea and vomiting. The first two things that come to mind are gallbladder disease and peptic ulcer. Since this patient had had her appendix out at a previous time, we can rule out trouble with the appendix. The patient stated that when she had pain and took food, the pain was relieved until the food "gave out." Apparently the pylorus closed and stopped the gastric juice from entering into the duodenum. When the pylorus opened again the food came into the duodenum and the pain recurred. These facts are in favor of a duodenal ulcer rather than gallbladder disease. Another point is that the pain radiated beneath the right shoulder. This could be due either to gallbladder disease or to a peptic ulcer. The fact that the vomitus was green and bitter simply means that there was a reflux of duodenal contents into the stomach, and not necessarily that the vomiting was due to gallbladder disease. She never complained of any icterus or itching of the skin, and had never been jaundiced. If her illness had been due to gallbladder disease she probably would have been jaundiced at some time and had itching, although the absence of these symptoms is not conclusive. The fact that she had never been bothered with gas and did not have to omit fried foods and greasy foods from her diet is not in favor of gallbladder disease. The failure to visualize the gallbladder by x-ray might be of significance, if the dye was given intravenously. If the dye was given by mouth this finding is not significant, unless there was enough in the colon to show that she had retained it.

DR. A. DET. VALK: She did retain the dye. I might say that this was the second gallbladder picture which she had had made, with the same findings in both.

DR. BENBOW: Then that would point strongly toward some gallbladder pathology, although the evidence is not conclusive. The next thing of importance is the sudden attack of severe epigastric pain which she had in the hospital. This attack suggests several possible conditions. Acute appendicitis, of course, is ruled out. The second possibility is acute mechanical obstruction. In mechanical obstruction there is peristalsis and paroxysmal pain. There is not very much abdominal rigidity between the paroxysms. Usually there is no elevation of the leukocyte count, especially at first. This patient's count went up from 7800 to 13,750, and the percentage of polymorphonuclears rose from 67 to 71 per cent. In obstruction by acute strangulation distention is marked, vomiting is persistent, and x-ray examination shows gas in the small intestine above the obstruction.

Another condition to be considered is acute cholecystitis. With acute cholecystitis vomiting is usually more or less persistent, and the temperature is usually high. This patient's temperature was not high. Jaundice may or may not be present in acute cholecystitis. The pain, and especially the tenderness, is always over the gallbladder region. This woman's pain remained in the epigastrium—a fact which favors ulcer more than gallbladder disease. Cholelithiasis must also be considered. With cholelithiasis the pain is agonizing, but is paroxysmal, and the pain and tenderness are greatest over the gallbladder. This pain was constant and was in the epigastrium.

Acute toxic gastritis or corrosive poisoning can be ruled out because the patient was in the hospital, and because none of the signs were present.

Pleurisy or pneumonia is always accompanied by a high white cell count and high fever, which this woman did not have. Vomiting is not common with pneumonia or pleurisy. The face is usually flushed and the alae nasi are working. The respirations are often grunting in character.

Another possibility to be considered is coronary occlusion. In a coronary occlusion there may be severe epigastric pain, but there is no tenderness. We may very well rule this out.

In gastric crises of tabes dorsalis there is epigastric pain which radiates over the abdomen. There is an absence of the knee jerks, a positive Romberg sign, Argyll Robertson pupils, a history of syphilis and of previous attacks, and a positive spinal fluid. The absence of these findings in this patient would rule that out. A mesenteric thrombus and acute pancreatitis are to be considered, but there were not enough signs and symptoms of shock for this.

The two remaining possibilities are gallbladder disease and a perforating ulcer. I believe that this patient had a perforating ulcer, which, instead of having perforated as most perforated ulcers do, with a lot of fluid being spilled into the peritoneal cavity, had just a slow leak which was partially sealed off. If she had had an x-ray film made in the upright position it might have shown air under the diaphragm if there was a perforated ulcer. Did she have an upright x-ray picture?

DR. VALK: No, she did not.

DR. BENBOW: My diagnosis of this case would be a slow leaking gastric or duodenal ulcer. If I had to choose one, I would say duodenal ulcer, judging by the history.

Pre-Operative Diagnosis

Chronic cholecystitis.

Dr. Benbow's Diagnosis

Leaking duodenal ulcer.

Postoperative Diagnosis

Perforating duodenal ulcer.

Operative Findings

DR. A. DET. VALK: You very seldom have referred pain to the right shoulder with a duodenal ulcer unless there is some leakage from the ulcer. This patient had referred pain under the right shoulder. The history as elicited by me was somewhat different from the one given on the chart, as the patient complained repeatedly of much gas, and at times would have to sit up in bed and "belch" to relieve it. After the severe attack on the morning before operation, she became better and rested quite comfortably during the day and went through the night with only 3 grains of nembutal. The abdomen was quite soft, but there was definite pain and tenderness in the right upper quadrant. When she was seen the night before operation the possibility of a leaking ulcer was considered, but the abdomen was so soft

that it was decided to wait until the next morning to operate.

At operation a paracostal incision was made and a mass was found slightly to the right of the midline and just above the region of the gallbladder. There was a small amount of slimy greenish-colored fluid in the abdominal cavity. This mass proved to be an ulcer of long standing, the leakage from which probably took place the morning before operation. The gallbladder was adherent along the first and second portions of the duodenum, and there was a small amount of fibrin over this region. When the gallbladder was freed there was an opening at the junction of the first and second portions of the duodenum that would admit the tip of the little finger. The gallbladder itself was fairly normal though slightly thickened where it had been adherent to the duodenum. There were no stones present. The question arose as to what to do with the enormous opening just above the entrance of the common duct into the duodenum. A mass of inflammatory fat in this region was sutured over the opening with plain catgut reinforced with silk. A posterior gastro-enterostomy was done. The pylorus was freed and a double suture of No. 3 chromic catgut was passed under it and tied so as to occlude the stomach at this point, thereby preventing any passage of gastric secretions over the ulcer site. The wound was closed with a small drain to the right renal fossa. The patient made an uneventful recovery and was discharged on the twentieth hospital day. There was no wound infection.

DR. BENBOW: I believe that the statement I made about epigastric pain from peptic ulcer radiating to the shoulder was misunderstood. I did not state that pain from a duodenal ulcer radiated to the left shoulder. I said that pain from a peptic ulcer may radiate to the shoulder. By the term peptic ulcer we mean both gastric and duodenal ulcer. If a patient has a peptic ulcer in the cardiac portion of the stomach the pain may radiate to the left shoulder, whereas if it is in the pyloric region of the stomach or duodenum it is more apt to radiate to the right shoulder.

A Clinical Picture.—What is spoken of as a "clinical picture" is not just a photograph of a man sick in bed; it is an impressionistic painting of the patient surrounded by his home, his work, his relations, his friends, his joys, sorrows, hopes, and fears.—Peabody, Francis W.: *Doctor and Patient*, New York, The Macmillan Company, 1939.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Workman's Compensation Act: Hernia Resulting From an "Accident".

In order to explain this principle of law a case was selected which was heard originally before the Industrial Commission. The essential facts are as follows: The plaintiff in this case worked for the Engineering and Sales Company of Wilmington, N. C., as foreman, but also at times was required to perform manual labor. On October 13, 1936, while the plaintiff and another employee, his assistant, were working on a plumbing job in the construction of a post office building, the plaintiff helped to lift a pipe weighing between 400 and 450 pounds. Upon so doing he felt a severe pain in the lower part of the abdomen. It should perhaps be stated in this connection that at the time the injury occurred all the men who were formerly employed on this particular project had been laid off; only the plaintiff and one laborer were left, and these men were instructed by their superiors to complete the work. According to the plaintiff's testimony he went immediately following the injury to a physician, who diagnosed the case as hernia and administered the necessary treatment. Since this time the injured man had not been able to carry on his usual line of work. The plaintiff stated that he had never suffered from hernia before. Two other physicians were subsequently called in to examine the patient. All the physicians were in practical agreement as to the diagnosis of hernia and gave testimony accordingly.

The Hearing Commissioner made an award to the plaintiff because he felt that, from the evidence, the injury arose out of and in the course of the plaintiff's regular employment. Later the Full Commission affirmed the award of the Hearing Commissioner, but modified the award because of additional evidence. The defendant appealed to the Superior Court of Wake County, and when this court affirmed the Industrial Commission, the defendant appealed to the Supreme Court upon the following exceptions: There was no evidence in the record: (1) that the plaintiff sustained an injury by "accident," which resulted in hernia, as required by the Workman's Compensation Act; (2) that the hernia occurred suddenly, as required by the statute; (3) that the hernia followed "accident," as required by the statute.

It was held by the court that "The evidence supports the inference that the routine had been interrupted by the discharge of all other employees on the job, resulting in claimant's having to lift weights he had never lifted before, and that therefore claimant's injury resulted from the introduction of unusual conditions constituting an 'accident' within the meaning of the Workmen's Compensation Act and not from the usual risks and hazards of his occupation."

It is further held that "The evidence sustains the conclusion that claimant was suffering from a lesion in the vicinity of the left inguinal ring at the time of the examination on the day after the accident, and at that time the process of protrusion down through the injured channel had set in, and while the time when the actual protrusion of the parts took place cannot be definitely known, the evidence discloses that the lesion occurred at the time of the accident and that actual protrusion occurred shortly thereafter, and justifies the conclusion of the Industrial Commission that the hernia appeared 'suddenly' within the meaning of the Statute." (N. C. Supreme Court Report 214, p. 425).

It is seen by the above case that an accident is dependent upon the introduction of unusual condi-

tions and can not occur by the ordinary and expected incidents of employment. The following cases are in contradistinction to the above case: In the case of Neely versus the City of Statesville and the Traveler's Insurance Company, Carrier, (N. C. Supreme Court Report 212, p. 365) it was held that the death of a fireman from heart failure brought on by excitement and exhaustion in fighting a fire was not the result of an accident. Heat, smoke, excitement and physical exertion were the ordinary and expected incidents of his employment. In the case of Slade versus Hosiery Mill, (N. C. Supreme Court Report 209, p. 823), it was held that it was not accident or injury that the employee got wet while washing machines, which was one of his ordinary duties, and later became exposed, contracted pneumonia and died from the results thereof.

BULLETIN BOARD

PRESIDENT'S MESSAGE

Medical Problems in North Carolina

Walter L. Pitkin, in LIFE BEGINS AT FORTY, remarks: "A man has not learned to live until among other accomplishments he can say what he wants to say, or having nothing to say can keep quiet." How few of us have grown up in this respect. To live, among other things, is to respond effectively to all we see and hear; it is also to induce responses in others who interest us.

Your excellent program today bespeaks the fact that your District Society has an exceptionally well organized personnel, wide awake, and acutely aware of all advances in medicine, with the will and vigor to use them with scientific aptitude and fitness. Your future as a scientific organization will depend not so much on postgraduate courses and guest speakers—no matter how much they contribute to your knowledge—as on the careful and constructive work of your members in working up and reporting accurately individual experiences in medicine for the benefit or the criticism of one another. Every member of this organization could make a constructive and valuable contribution to medicine by a careful accumulation of data on some subject in which he has had a broad experience and a vital and abiding interest. It is worth the labor and the trouble which you put into it.

On April 14, 1941, a fateful hour struck for American Medicine when a Federal Jury found the American Medical Association and the Medical Association of the District of Columbia guilty of violation of the Anti-

Trust Laws. The jury deliberated about eleven hours, and had among its number two women—one a negress, the other a W.P.A. worker. The trial lasted for two months. Litigation carried to the Supreme Court had brought a ruling that the medical profession, in the meaning of Anti-Trust Statutes, conducts a trade. The Government charged that the two organizations and individual physicians had entered into a conspiracy in restraint of trade which interfered with the operation of a Group Health Association giving medical service to government employees for a monthly advance fee. It was asserted and charged that members of the medical groups were threatened with expulsion from their District Society and banishment from the American Medical Association, which would mean ostracism by all of their medical associates. Defense attorneys and witnesses denied these allegations. They declared that the American Medical Association was not opposed to group medical practice. Evidence was submitted to show that the group health organization in question was ineffectively operated, and incapable of treating the scores of patients it was required to handle. Drs. Fishbein and West of the American Medical Association said in a statement to the press: "Regardless of the verdict, the American Medical Association will continue to do its utmost for the prevention and treatment of disease and the improvement of Public Health."

Group health insurance for the low income groups is claiming the attention of all sections of the country today. It has been endorsed by several of our county societies, and it has been put into practice in several large low income groups within the boundaries of these societies. The insurance has been sponsored by well organized hospital insurance associations. Of necessity, the health insurance plans must have the help and endorsement of the physicians practicing in that community. The question of fees and group health insurance will be a controversial one for some years to come. The recent court decision will make it more so, as the threat of the law is always a potent one. Any constructive efforts on our part to bring medical care to the low income groups will be a contribution to the social evolution of our time. The liberal point of view is just as valuable as the conservative one; for between the two we may hope to find a solution of a pressing social problem.

Many other urgent and interesting medical problems confront us in North Carolina. New horizons constantly challenge us; new frontiers are to be crossed; and new boundaries delineated. Mental hygiene is a relatively unexplored field in our state. A rising tide of commitments to our mental hospitals should make us conscious of the fact that over half of the hospital beds in the state are occupied by mental cases; that most of these patients have been ill for more than a year before admission; that our mental hospitals are understaffed with physicians and trained attendants; that their wards are overcrowded; and that little has been done to prevent insanity or to preserve mental health. An aroused public will some day realize these facts, and we, as physicians, should be able to furnish the leadership in a campaign to establish mental hygiene and child guidance clinics in all parts of North Carolina, and to make our State Hospitals the centers of well directed efforts to save much of the human wastage that now afflicts our state. A campaign for mental hygiene similar to the tuberculosis campaign has been successful in states where it has been tried. Coordination between all of our state departments which deal in human relations is also a necessity.

The defense program has made us aware that approximately 40 per cent of our young men of military age have defects which disqualify them for military service. Many of the defects brought out in examinations for military service are remediable. Our problem is how to reach these young men, and how to cure them. The N. Y. A. is preparing to help as many as it can.

We need a broadening of the sterilization laws in North Carolina. Only 350 people have been legally sterilized in the state in the last two years. There are many disabling hereditary diseases which can be prevented only by sterilization of the transmitters. Many of our helpless and blind are hereditarily so. A third of the students who have attended or who now attend the state blind school fall into this class. Approximately 50 per cent of the criminals in our prisons are repeaters, and are found to have venereal diseases upon admission. Why not sterilize those serving third terms in prison?

The Statistical Department of the State Board of Health reports that in 1940 there were 22,140 new cases of venereal diseases. There are now 36,000 active cases of syphilis

under treatment in public health clinics in North Carolina. The incidence of syphilis in North Carolina is 40 to 50 per thousand among the whites and 150 to 180 per thousand among the negroes. In a recent survey of draft registrants in Harnett County, the syphilis rate was 6 per thousand for the whites, and 218 per thousand for the negroes. An issue of national importance in the defense program is the problem of protecting men coming from the New England states, where the syphilis rate is only 80 per thousand, to a state like Florida where the rate is 114 per thousand. The venereal disease rate in any army camp is a reflection of conditions in the communities surrounding the camp.

On September 30, 1940, there were 17,150 crippled children on the state register for orthopedic care. According to census figures there were 33,564 deaths in North Carolina in 1938. Of these, 7,494 were children under ten. In the United States as a whole in the same year there were 1,381,394 deaths, of which 162,996 were under ten years of age. Thus in North Carolina the death rate for children under ten was 22.3 per cent, and only 11.8 per cent in the United States. It has been estimated that 75 per cent of the deaths of children are preventable.

I call your attention to these conditions because they exist as fields of useful medical endeavor. I do not mean to infer that they are not being attacked, because they are, and by the best medical brains in North Carolina. Each year progress is being made. It is beyond the scope of a paper of this type to give a recital of all our efforts and accomplishments. Suffice it to say here that the State Board of Health is now sponsoring a total of 496 clinics throughout the state, including 20 for crippled children, and 190 for maternity and infancy care. There are many private free clinics also doing notable work. Poverty and disease go hand in hand, and the greatest morbidity and mortality are in the indigent group. Throughout the ages enlightened people have worked conscientiously on the problem of poverty, and it is as yet unsolved.

The present status of our medical society is satisfactory. Its membership is as large as it has ever been. We owe no money, and our operation is smooth and harmonious. In the death of our beloved secretary, Dr. Thomas W. M. Long, we suffered a tremendous loss. Dr. Isaac Manning, well known

to all of you and well loved wherever he is known, was elected by the executive committee of your society to fill in Dr. Long's unexpired term. He is doing this work in the distinguished fashion which he applies to any task he undertakes.

May I say again that I am grateful to you for your hospitality; that I am certain that you will accept any challenge which may appear on the broad medical horizon; and that success will crown your efforts in making the medical dreams and imaginations of yesterday and today become realities of tomorrow.

HUBERT B. HAYWOOD, M.D.

EIGHTY-EIGHTH ANNUAL SESSION

Official Call

According to the By-Laws, as amended at the 1940 session, the House of Delegates will convene at Pinehurst in the Ball Room of The Carolina, Monday afternoon, May 19, 1940, at 2:00 o'clock.

Hubert B. Haywood, President.

Attest:

I. H. Manning, Secretary-Treasurer.

RESUME OF PROGRAM

(All sessions will be held in the various Convention rooms of The Carolina)

MONDAY, MAY 19, 1941

- 9:00 a. m.—Registration, North Carolina Public Health Association.
- 10:00 a. m.—Morning Session, North Carolina Public Health Association. (Ball Room)
- 2:00 p. m.—House of Delegates, Medical Society of the State of North Carolina. (Ladies Card Room)
- 2:00 p. m.—Section Meetings, North Carolina Public Health Association:
Health Officers (Ball Room); Nurses (Pine Room); Secretaries (Men's Card Room); Sanitarians (Civic Club, Southern Pines).
- 3:00 p. m.—Drive to State Sanatorium. Tea, Mrs. P. P. McCain's Residence.
- 7:30 p. m.—North Carolina Public Health Association. (Ball Room) Address and Business Session.
- 8:00 p. m.—House of Delegates, Medical Society of the State of North Carolina. (Ladies Card Room)
- 8:30 p. m.—Keno and Bermuda Movie. (Pine Room)
- 10:00 p. m.—Dance, North Carolina Public Health Association. (Ball Room)

TUESDAY, MAY 20, 1941

- 9:00 a. m.—Sanitarians Section, N. C. P. H. A. (Civic Club, Southern Pines)
- 9:00 a. m.—Woman's Auxiliary Executive Board Meeting. (Pine Room)
- 9:00 a. m.—First General Session Medical Society of the State of North Carolina. (Ball Room)
- 10:30 a. m.—Annual Meeting Woman's Auxiliary. (Pine Room)
- 2:00 p. m.—Sanitarians Section, N. C. P. H. A. (Civic Club, Southern Pines)

- 2:00 p. m.—Section Meetings, Medical Society of the State of North Carolina:
Ophthalmology and Otolaryngology (Men's Card Room); Practice of Medicine (Ball Room); Surgery (Ladies' Card Room); Public Health and Education (Dutch Room).

4:00 p. m.—Bridge, Pine Room.

9:00 p. m.—President's Reception.

10:00 p. m.—Annual Medical Society Ball. (Ball Room)

WEDNESDAY, MAY 21, 1941

- 9:00 a. m.—Second General Session, Medical Society of the State of North Carolina. (Ball Room)
- 9:30 a. m.—Drive to Orchid Gardens or neighboring Antique Shops.
- 11:30 a. m.—Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health. (Ball Room)
- 2:00 p. m.—Section Meetings: General Practice of Medicine and Surgery (Ball Room); Gynecology and Obstetrics (Ladies' Card Room); Pediatrics. (Men's Card Room)
- 2:30 p. m.—Last Session House of Delegates. (West Parlor)
- 5:00 p. m.—Third General Session, Medical Society of the State of North Carolina. (Ball Room)

SESSIONS OF THE HOUSE OF DELEGATES

May 19, Monday, 2:00 p. m. (Ladies' Card Room)

8:00 p. m. (Ladies' Card Room)

May 21, Wednesday, 2:30 p. m. (West Parlor)

PROGRAM OF THE GENERAL SESSIONS

FIRST GENERAL SESSION

Tuesday, May 20, 9:00 A. M.

(Ball Room)

1. Call to Order, I. H. Manning, Chairman, Committee on Arrangements.
2. Invocation, Rev. Thaddeus A. Cheatham.
3. Announcements, I. H. Manning, M.D., Secretary-Treasurer.
4. Presentation of the President, Hubert Benbury Haywood, M.D., Raleigh.
5. President's Address, Hubert Benbury Haywood, M.D., Raleigh.
6. Presentation of President's Jewel to Hubert Benbury Haywood, M.D., by President-Elect F. Webb Griffith, M.D., Asheville.
7. Frank H. Lahey, M.D., President-Elect, American Medical Association, Boston, Mass. (Guest Speaker): "Developments in Medicine, Economic and Scientific."
8. Report of Committee on Award of Moore County Medical Society Medal for Best Paper read at 1940 Session and Presentation of Medal.
I. H. Manning, M.D., Chairman, Chapel Hill.
Wingate M. Johnson, M.D., Winston-Salem.
E. J. Wannamaker, Jr., M.D., Charlotte.
9. Report of Obituary Committee:
J. B. Cranmer, M.D., Chairman, Wilmington.
Ben J. Lawrence, M.D., Raleigh.
Paul H. Ringer, M.D., Asheville.
10. Louis H. Clerf, M.D., Philadelphia, Pa. (Professor of Bronchoscopy and Esophagoscopy, Jefferson Medical College.) "Tumors of the Larynx and Hypopharynx." Moving pic-

tures and lantern slides. From Section on Ophthalmology and Otolaryngology.

11. T. M. Watson, M.D., Greenville. "Appendicitis in Small Children." From Section on Pediatrics.
12. Mrs. P. P. McCain, Sanatorium. "The Woman's Auxiliary."

SECOND GENERAL SESSION

Wednesday, May 21, 9:00 A. M.

(Ball Room)

1. James A. Watson, M.D., Director of Mental Hygiene, State Board of Charities and Public Welfare, Raleigh. "The Medical Profession and the Problem of Mental Disorder." Discussion opened by James W. Vernon, M.D., Morganton, and F. L. Whelpley, M.D., Goldsboro. From Section on General Practice of Medicine and Surgery.
2. Wilburt C. Davison, M.D., Dean, Duke University School of Medicine, Durham. (McBrayer Memorial Lecturer and Guest Speaker.) "The First Ten Years of Duke University School of Medicine and Duke Hospital."
3. J. W. Tankersley, M.D., Greensboro. "The Surgical Aspects of Splenic Disease." From Section on Surgery.
4. W. T. Rainey, M.D., Fayetteville. "The Management of Congestive Heart Failure." From Section on Practice of Medicine.
5. Major Elmus D. Peasley, M.D., Raleigh. "The Physical Status of the Selective Service Draftees." From Section on Public Health and Education.
6. Charles Hampton Mauzy, M.D., Winston-Salem. "Caesarean Section, Its Incidence and Fetal Mortality in Some Cities in North Carolina." From Section on Gynecology and Obstetrics.
7. 11:30—Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health.

THIRD GENERAL SESSION

Wednesday, May 21, 5:00 P. M.

(Ball Room)

1. Report of House of Delegates.
2. Unfinished Business.
3. New Business.
4. Installation of President F. Webb Griffith, M.D., and President-Elect by retiring President Hubert Benbury Haywood, M.D.
5. Remarks by President and President-Elect.
6. Adjourn sine die.

SECTION MEETINGS

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY

Tuesday, May 20, 2:00 P. M.

(Men's Card Room)

H. L. Cook, M.D., Greensboro, Chairman

1. W. P. McKay, M.D., Fayetteville—"Salivary Calculi." (Lantern slides)
2. J. F. McGowan, M.D., Asheville—"The Significance of Cough in Otolaryngology."
3. W. Banks Anderson, M.D., Duke University, Durham—"Virus Diseases Affecting the Eye and Adnexa."
4. C. R. Mills, M.D., Greensboro—"The Importance of Recognizing Fundus Pathology."
5. Louis H. Clerf, M.D., Philadelphia, Pa. (Professor of Bronchoscopy and Esophagoscopy, Jefferson Medical College)—"Tumors of the Larynx and Hypopharynx. (Moving pictures and lantern slides) Before First General Session.

SECTION ON SURGERY

Tuesday, May 20, 2:00 P. M.

(Ladies' Card Room)

R. O. Lyday, M.D., Greensboro, Chairman

1. R. B. McKnight, M.D., Charlotte—"Some Observations Drawn from a Series of 500 Consecutive Thyroidectomies."
2. T. C. Bost, M.D., Charlotte—"Additional New Technic for the Cure of Inguinal Hernia."
3. Newsom P. Battle, M.D., Rocky Mount—"Perforated Duodenal Ulcer."
4. David J. Rose, M.D., Goldsboro—"Vaginal Ureterolithotomy."
5. G. C. Cooke, M.D., Winston-Salem—"Some Conclusions Derived from 200 Cholecystectomies."
6. Lenox D. Baker, M.D., Durham—"The Use of Antitoxin and Chemotherapy in the Treatment of Staphylococcus Septicemia and Osteomyelitis." Discussion opened by J. E. Jacobs, M.D., Charlotte.
7. J. W. Tankersley, M.D., Greensboro—"The Surgical Aspects of Splenic Disease." Before the Second General Session.

SECTION ON PRACTICE OF MEDICINE

Tuesday, May 20, 2:00 P. M.

(Ball Room)

C. D. Thomas, M.D., Sanatorium, Chairman

1. C. D. Thomas, M.D., Sanatorium (Chairman's Address)—"Tuberculosis and National Defense."
2. Walter R. Johnson, M.D., Asheville—"Is Diverticulitis of the Colon a Surgical Disease?" Discussion opened by R. B. McKnight, M.D., Charlotte.
3. C. Graham Reid, M.D., Charlotte—"Medical Management of the Bleeding Ulcer." Discussion opened by Walter R. Johnson, M.D., Charlotte.
4. W. Raney Stanford M.D., Durham—"Acute Glomerulo-Nephritis with Special Reference to Treatment." Discussion opened by Wm. deB. MacNider, M.D., Chapel Hill.
5. J. C. Pass Fearrington, M.D., Winston-Salem—"Management of the Early Diabetic." Discussion opened by O. Norris Smith, M.D., Greensboro.
6. R. MacBrayer, M.D., Summit, N. J.—"Androgenic Therapy in General Practice." Discussion opened by Hamilton W. McKay, M.D., Charlotte.
7. W. T. Rainey, M.D., Fayetteville—"The Management of Congestive Heart Failure." Before Second General Session.

SECTION ON PUBLIC HEALTH AND EDUCATION

Tuesday, May 20, 2:00 P. M.

(Dutch Room)

Geo. H. Sumner, M.D., Asheville, Chairman

1. Captain J. W. Roy Norton, M.D., Fort Bragg—"Medical Preparedness in National Defense."
2. C. D. Berry, M.D., and R. A. Alter, M.D., Durham—"A Practical Plan for the Reduction of Infant and Maternal Mortality."
3. Frank S. Fellows, M.D., Raleigh—"Relationship of Malaria to False Positive Serologic Test for Syphilis."
4. Major Elmus D. Peasley, M.D., Raleigh—"The Physical Status of the Selective Service Draftees." Before Second General Session.

SECTION ON GYNECOLOGY AND OBSTETRICS

Wednesday, May 21, 2:00 P. M.

(Ladies' Card Room)

W. L. Thomas, M.D., Durham, Chairman

1. W. Z. Bradford, M.D., Charlotte—"A Comparative Study of Pregnancy in the White and Colored Races."

2. C. N. Burton, M.D., Asheville—"The Clinical Application of Chemotherapy in Obstetrics and Gynecology."

3. Kenneth Dickinson, M.D., Raleigh—"The Maternal Pelvis as Seen by Routine X-Ray Examination."

4. William S. Doshier, M.D., Wilmington—"The Etiology of Uterine Prolapse and Its Management."

5. Lance T. Moore, M.D., Kannapolis—"Prolonged Labor—Its Etiology and Management."

6. Charles Hampton Mauzy, M.D., Winston-Salem—"Caesarean Section, Its Incidence and Fetal Mortality in Some Cities in North Carolina." Before Second General Session.

SECTION ON PEDIATRICS

Wednesday, May 21, 2:00 P. M.

(Men's Card Room)

B. W. Roberts, M.D., Durham, Chairman

1. W. E. Keiter, M.D., Kinston—"Treatment of Bacillary Dysentery in Infants."

2. John A. Shaw, M.D., Fayetteville—"Childhood Tuberculosis."

3. Kenneth B. Geddie, M.D., High Point—"A Familial Study of Enlarged Parietal Foramina."

4. Charles F. Williams, M.D., Raleigh—"Measles—Wake County Epidemic 1941."

5. T. M. Watson, M.D., Greenville—"Appendicitis in Small Children." Before the First General Session.

SECTION ON GENERAL PRACTICE OF MEDICINE AND SURGERY

Wednesday, May 21, 2:00 P. M.

(Ball Room)

H. C. Thompson, M.D., Shelby, Chairman

1. W. C. Highsmith, M.D., Fayetteville—"Mechanism of Contraception." (Illustrated)

2. Paul C. Reque, M.D., and Paul L. Williams, M.D., Duke University, Durham—"Occupational Dermatitis." Discussion opened by Joseph A. Elliott, M.D., Charlotte.

3. Robert B. Lawson, M.D., School of Public Health, Chapel Hill—"A Practical Plan for the Use of Vitamin K in the Prevention of Hemorrhage in the Newly-Born Infant." Discussion opened by W. Houston Moore, M.D., Wilmington and T. M. Watson, M.D., Greenville.

5. Roscoe D. McMillan, M.D., Red Springs—"The Management of Some of the Problems of Later Life."

6. Eugene M. Carr, M.D., Asheville—"Rheumatic Fever." Discussion opened by C. M. Gilmore, M.D., Greensboro.

7. James A. Watson, M.D., Director of Mental Hygiene, State Board of Charities and Public Welfare, Raleigh—"The Medical Profession and the Problem of Mental Disorder." Discussion opened by James W. Vernon, M.D., Morganton and F. L. Whelpley, M.D., Goldsboro. Before Second General Session.

Thirty-First Annual Meeting

NORTH CAROLINA PUBLIC HEALTH ASSOCIATION

May 19, 1941

Carolina Hotel, Pinehurst, N. C.

President—J. W. Williams, Williamston

Vice-President—R. E. Rhyne, Gastonia

Secretary-Treasurer—Ralph J. Sykes, Raleigh

MONDAY MORNING, MAY 19

President J. W. Williams, Presiding

(Ball Room)

9:00 a. m.—Registration.

10:00 a. m.—Invocation: Rev. W. S. Golden, Carthage.

Medical Problems Involved in Better Maternal and Child Health Service. Dr. A. W. Makepeace, Chapel Hill. Discussion led by Dr. G. M. Cooper, Raleigh, and Miss Mabel Patton, Raleigh.

Public Health Problems Created in Flood Disasters. Dr. Robert F. Young, Weldon. Discussion led by Drs. H. G. Baity, Chapel Hill, W. R. Parker, Jackson, and C. N. Sisk, Waynesville.

The Recent Wassermann Survey Conducted on Draftees. Dr. John H. Hamilton, Raleigh. Discussion led by Drs. Carl V. Reynolds, Raleigh, and J. C. Knox, Raleigh.

Public Health and National Defense. Dr. M. J. Rosenau, Chapel Hill. Discussion led by Dr. J. Roy Norton, Fort Bragg.

The Coordination of Public Health Nursing Services With Other Services in a Generalized Program. Mrs. Lewis Raulston, Greensboro.

MONDAY AFTERNOON, MAY 19

2:00 p. m.—Sectional Meetings:

Health Officers' Section, Dr. C. N. Sisk, Chairman. (Ball Room)

Nurses' Section, Miss Ruth Council, Chairman. (Pine Room)

Sanitarians' Section, Mr. W. C. Stallings, Chairman. (Civic Club, Southern Pines, N. C.)

Secretaries' Section, Mrs. Mayme Stanley, Chairman. (Men's Card Room)

MONDAY EVENING, MAY 19

President J. W. Williams, Presiding

7:30 p. m.—Address—Relationships in State and Local Public Health Work. Dr. H. S. Mustard, Professor of Preventive Medicine, Columbia University, New York City. (Ball Room)

8:30 p. m.—Business Session. (Ball Room)

10:00 p. m.—Dance. (Ball Room)

HEALTH OFFICERS' SECTION

Chairman—Dr. C. N. Sisk

Secretary—Dr. W. P. Richardson

MONDAY, MAY 19, 2:00 P. M.

(Ball Room)

1. Health Problems in an Area Surrounding a Large Military Establishment—Dr. M. T. Foster, Cumberland County Health Officer, Fayetteville, N. C.
2. Instruction vs. Service in the Health Program—Dr. P. Y. Greene, Alamance County Health Officer, Burlington, N. C.
3. Evaluation of the Syphilis Program of the Local Health Department—Dr. John J. Wright, Research Epidemiologist, School of Public Health, University of North Carolina.
4. The N. Y. A. Health Program—Dr. George E. Waters, North Carolina N. Y. A. Health Supervisor.
5. Election of Officers and Other Business.

ALUMNI MEETINGS

TUESDAY, MAY 20

1:00 p. m.—Wake Forest Alumni Luncheon. (Crystal Room)

1:00 p. m.—Fracture Committee Luncheon. (Private Dining Room)

6:30 p. m.—University of North Carolina Alumni. (Crystal Room)

6:30 p. m.—Duke University Alumni. (Private Dining Room)

WEDNESDAY, MAY 21

1:00 p. m.—Jefferson Alumni Luncheon.
(Crystal Room)

1:00 p. m.—University of Pennsylvania Luncheon.
No extra charge for Luncheon or
Dinner Meetings for those registered
at the Carolina; others, Luncheon
Meeting \$1.50 per plate; Dinner
Meetings, \$2.00 per plate.

SCIENTIFIC EXHIBITS

- J. Lamar Callaway, M.D., and Miss Ruth E. Barker,
A.B., M.A., From Section of Dermatology and
Syphilology, Department of Medicine and from
the Social Service Department, Duke University
School of Medicine. "Role of the Medical Social
Worker in the Control of Syphilis."
N. C. Hospital Savings Association, Chapel Hill,
N. C.
Barnes Woodhall, M.D., Durham. "Medical Illus-
tration in Neurosurgery."
"Public Health Nursing." Nurses Section, North
Carolina Public Health Association.

COMMERCIAL EXHIBITS

- American Hospital Supply Company, Chicago, Ill.
Spaces No. 61, 62, and 63.
A. S. Aloe Company, Saint Louis, Mo. Spaces No.
29 and 30.
The Borden Company, New York City. Space No.
47.
Ciba Pharmaceutical Products, Inc., Summit, N. J.
Spaces 66 and 67.
Endo Products, Inc., Richmond Hill, N. Y. Space
No. 56.
C. B. Fleet Company, Lynchburg, Va. Space 16.
General Electric X-Ray Corporation, Chicago, Ill.
Spaces No. 14 and 15.
Lederle Laboratories, Inc., New York City. Space
No. 34.
Harrower Laboratory, Inc., Glendale, Cal. Space
No. 42.
Holland-Rantos Company, Inc., New York City.
Space No. 38.
Eli Lilly and Company, Indianapolis, Ind. Spaces
No. 36 and 37.
M & R Dietetic Laboratories, Inc., Columbus, Ohio.
Spaces No. 48 and 49.
Mead Johnson & Company, Evansville, Ind. Spaces
No. 45 and 46.
Picker X-Ray Corporation, New York City. Spaces
No. 25 and 26.
Powers and Anderson Surgical Instrument Company,
Norfolk, Va. Spaces No. 50, 51, and 52.
S. & H. X-Ray Company, Atlanta, Ga. Card Room.
Schering Corporation, Bloomfield, N. J. Spaces No.
21 and 22.
Smith, Kline & French Laboratories, Philadelphia,
Pa. Spaces No. 43 and 44.
E. R. Squibb & Sons, New York City. Spaces No.
23 and 24.
Tablerock Laboratories, Greenville, S. C. Space No.
18.
Valentine Company, Inc., Richmond, Va. Space No.
17.
Van Pelt & Brown, Inc., Richmond, Va. Spaces No.
27 and 28.
Winchester-Ritch Company, Greensboro, N. C.
Spaces No. 53, 54, and 55.
Winchester Surgical Supply Company, Charlotte, N. C.
Spaces No. 58, 59, and 60.
Winthrop Chemical Company, Inc., New York City.
Spaces No. 19 and 20.
John Wyeth & Brother, Inc., Philadelphia, Pa.
Spaces No. 64 and 65.

NOTICE TO ESSAYISTS

Important

Each Essayist is requested (see By-Laws) to hand
to the Chairman following the reading of the paper,
an original copy, together with any illustrations or
other material used with the paper. Those desiring
to review their papers before publication should
make a carbon copy for such purpose.

POSTGRADUATE COURSES IN PEDIATRICS
AND OBSTETRICS

The State Board of Health, Duke Hospital and
the North Carolina Medical Society are cooperating
in a new type of postgraduate training for general
practitioners. These courses are being made avail-
able by appropriations from the United States Chil-
dren's Bureau from Social Security funds. The
courses will last five days, Monday through Friday,
and will be repeated weekly through the spring and
summer, or as often as there is a demand.

The classes are to be limited to four general
practitioners a week. The course will be informal,
clinical and practical. There will be no examina-
tions given and no certificates will be issued. The
courses will be conducted by Dr. A. W. Makepeace
(obstetrician) and Dr. Robert B. Lawson (pedia-
trician) and various staff members of the depart-
ments of obstetrics and pediatrics of Duke Hos-
pital.

There will be no expense to physicians attending
these courses. Meals will be furnished in the doc-
tors' dining room at Duke Hospital and rooms will
be available in the graduate dormitory on the Duke
campus. There will be no charge for tuition, board
and lodging—if you stay for the entire course.

It is hoped that at least one group of physicians
from every local medical society will attend these
courses.

All applications should be sent to Dr. G. M.
Cooper, State Board of Health, Raleigh. The first
course will began April 14, 1941.

NEWS NOTES FROM THE UNIVERSITY
OF NORTH CAROLINA

Dr. Russell L. Holman, Associate Professor of
Pathology, attended the meeting of the Federation of
Societies for Experimental Biology the week of April
14-19 in Chicago, and presented a paper before the
American Society for Experimental Pathology en-
titled: "Acute Necrotizing Arteritis, Aortitis, and
Auriculitis Following Uranium Nitrate Injury in
Dogs With Altered Plasma Proteins."

* * *

Dr. Clark E. Brown, of the Department of Path-
ology, has just returned from the annual meeting
of the American Association of Pathologists and
Bacteriologists held in New York City April 9-11,
inclusive.

* * *

Dr. G. L. Donnelly, Associate Professor of Phar-
macology, presented a paper before the American
Society for Pharmacology and Experimental Thera-
peutics in Chicago on April 19, the title being "The
Protection of the Kidney Against the Toxic Action
of Certain Heavy Metals by the Use of Sodium
Citrate."

* * *

Dr. Granvil C. Kyker, Assistant Professor of Bio-
logical Chemistry, presented a paper on "Absorption
Studies in Quinine Administration to Dogs" before
the American Society of Biological Chemists in
Chicago during the week of April 16-19.

Doctors A. T. Miller and H. D. Bruner attended the American Physiological Society during the recent meeting of the American Federation of Biological Sciences in Chicago.

* * *

Doctors C. D. VanCleave and W. C. George, of the Department of Anatomy, presented papers at the recent meeting of the American Association of Anatomists in Chicago, April 9-12. The former presented a paper entitled "The Inductive Effects of Several Non-Living Organs on Isolated Gastrular Ectoderm", and the latter a paper "A Presomite Human Embryo With Chorda Canal".

* * *

At the meeting of the North Carolina Academy of Sciences in Chapel Hill, April 25-26, the following members of the Medical Faculty read papers: Dr. H. Ward Ferrill on "Insulin and Growth"; Dr. W. C. George on "Some Young Human Embryos With Particular Reference to the Prechordal Plate"; Dr. Granvil Kyker on "Studies on the Absorption of Quinine"; Mr. Carl Anderson, Research Assistant of the Biological Chemistry Department, on "Quinine Absorption from Isolated Intestinal Loops"; Dr. James C. Andrews and Mr. W. E. Cornatzer, of the Biological Chemistry Department, on "The Properties of the Proteolytic Enzyme of the Fig".

* * *

Dr. William deB. MacNider, Professor of Pharmacology, attended a meeting of the American Philosophical Society in Philadelphia April 25 and 26, and the National Academy of Sciences in Washington April 28 and 29.

* * *

Dr. Wilson G. Smillie, who is Head of the Department of Public Health and Preventive Medicine at Cornell University Medical College, has been appointed Visiting Professor of Public Health Administration in the School of Public Health, University of North Carolina. Dr. Smillie is giving a course in Public Health Administration in the School of Public Health during the spring quarter, 1941.

* * *

Miss Margaret Blee, Instructor in Public Health Nursing of the University of California at Berkeley, has been appointed Assistant Professor of Public Health Nursing in the School of Public Health, the University of North Carolina at Chapel Hill.

* * *

Dr. H. G. Baity has been appointed special consultant to the U. S. Public Health Service to assist in conducting orientation courses for public health personnel who are to be employed in connection with the Health and Sanitation Service to be provided in defense areas.

* * *

Professor Harold B. Gotaas will present before a meeting of the American Association of Industrial Physicians and Surgeons and the American Industrial Hygiene Association a paper, "Natural Disappearance and Disinfection of Bacteria in Air", by A. E. Williamson and H. B. Gotaas, on May 7 at Pittsburgh.

* * *

Miss Lucile Logan, known to scientists throughout the country as an authority on malaria parasites, was in Chapel Hill for two weeks in April aiding Dr. Harold W. Brown, of the University's School of Public Health, with instruction in malariology. The descriptions of malaria parasites recently published by Miss Logan and a co-worker are recognized as the standard by investigators in this field. She was recently detailed by the Rockefeller Foundation Malaria Research Laboratory for the work at Chapel Hill.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

During the first quarter of 1941 425 North Carolinians were killed by preventable accidents, as compared with a total of 1,535 for the entire year of 1940. If the same rate is maintained that has marked the year so far, the total will be 1,700, as compared with 1,535 last year and 1,481 in 1939—an increase of 165 over 1940 and 219 over 1939.

During the entire period in which the United States was engaged in fighting in the first World War, there was a total of 833 fatal casualties among North Carolina men overseas, 629 of whom were killed in battle and 204 died as the direct result of wounds. This was just a few more than half as many as actually died from preventable accidents within North Carolina last year.

Last year, out of 988 persons who were killed outright as the result of highway accidents in North Carolina, 110 were the victims of drunken driving. These figures come from the office of Mr. Ronald Hocutt, Director of the North Carolina Highway Safety Division.

* * *

Through March, this year, there were born in North Carolina 20,333 babies. During 1940, when there was a total of 80,971 births in our state, 4,646 died during the first year of their existence, the infant mortality rate having been 56.3, as compared with a general death rate of 9.0.

So far this year infant mortality has shown an increase. Through March, there had been 1,465 deaths among babies under a year old, as compared with 1,317 for the corresponding period in 1940—an increase this year of 148. There has been a decrease of 14 in the number of maternal deaths.

* * *

Late census counts would indicate that there are as many as 60,000 physically handicapped persons in our state. The State Board of Health, through its crippled children's services, has conducted a program of finding children and youth who, from birth, disease, or injury have sustained disabling and handicapping conditions. Through the coordinating services of the crippled children's agency these children and youth are being examined and classified, as they are found, into groups for preserving and conditioning functional factors looking toward the ultimate in physical and vocational rehabilitation. We now have registered some 17,000 crippled persons under 21 years of age. Annually, hospital care and treatment is provided to 1,500, and additional numbers are treated in clinics or are securing preservation of physical qualities which otherwise would be lost.

* * *

A 103-page handbook for teachers has been issued by the Division of Oral Hygiene of the North Carolina State Board of Health and distribution of 10,000 copies now is in progress, it was announced by Dr. Ernest A. Branch, Director of the Division.

The subject of the book is "Teaching Mouth Health in North Carolina." It is illustrated with pictures and charts and is rich in reference material.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

A symposium on tuberculosis in industry will be held at Saranac Lake, N. Y., from June 9 to June 14. The symposium will be sponsored by the Trudeau School of Tuberculosis. The tuition fee will be \$25, and applications are being received by Roy Dayton at the School.

It is hoped that construction will be started by July on the first units of the new \$600,000 Eastern North Carolina Sanatorium at Wilson. The sanatorium will be located on a 125-acre tract of land, donated by the citizens of Wilson.

The funds appropriated by the North Carolina General Assembly will provide, first, for a completely serviced unit for 200 patients. The eventual capacity of the sanatorium will be 400 patients.

HOSPITAL SAVING ASSOCIATION

On April 15 the record of the Hospital Saving Association of North Carolina was as follows:

Net membership to date.....	145,880
Net increase during 3½ months of 1941	8,119
Members admitted to date.....	34,589
Members admitted during 3½ months of 1941	3,672
Number of admissions to date.....	46,560
Admissions during 3½ months of 1941	5,777
Days used to date	367,121
Days used during 3½ months of 1941.....	46,717
Hospital bills paid to date.....	\$1,500,000.49
Bills paid during 3½ months of 1941	\$184,957.22

FIFTH DISTRICT MEDICAL SOCIETY

The Fifth District Medical Society held its spring meeting at the Sanford Country Club as guests of the Lee County Medical Society, on April 15 at 4 p. m. Those taking part in the program were Dr. G. C. Chiles of Sanford, who presented some cases of hernia prepared by fascia; Dr. J. H. Byerly of Sanford, who presented a case of cranial stenosis with exophthalmos; Dr. Lynn McIver of Sanford, who showed a 15 year old colored girl with osteogenic sarcoma of the skull and metastasis; Dr. I. H. Manning of Chapel Hill, who gave a paper on medical and hospital costs; Mr. Pittman, who spoke on veterans' care; and Dr. Lenox D. Baker of Durham, who gave a paper on the treatment of Colles fracture. Following the program a chicken barbecue dinner was served. Dr. J. F. L. Knight, president of the society, presided.

EIGHTH DISTRICT MEDICAL SOCIETY

The Eighth District Medical Society met in Winston-Salem on April 16. The afternoon session, beginning at 1:30 p. m., was held in the new Bowman Gray School of Medicine of Wake Forest College, with Dr. Paul W. Johnson of Winston-Salem, presiding. The program was as follows:

Dr. Robert L. McMillan: "Massive Hemorrhage From the Stomach and Duodenum—Its Causes and Treatment" — Discussant: Dr. Wingate Johnson.

Dr. C. L. Haywood, Jr.: "Pre-Operative Skin Disinfection With 70 Per Cent Alcohol by Weight"—Discussant: Dr. W. H. Sprunt, Jr.

Dr. L. D. Tyson, Jr.: "Breech Deliveries"—Discussant: Dr. C. H. Mauzy.

Dr. Samuel F. Ravenel: "Chemotherapy of Bacillary Dysentery", with lantern slides—Discussant: Dr. L. J. Butler.

Dr. F. K. Garvey: "Present Status of the Male Sex Hormone"—Discussant: Dr. H. C. Harrell.

Following the afternoon session, members of the society attended the laying of the corner stone of the Bowman Gray School of Medicine. At 7 p. m. a banquet was held at the Robert E. Lee Hotel. Dr. Frederic M. Hanes of Duke University introduced the guest speaker, Dr. Nathan B. van Etten, President of the American Medical Association. Dr. van Etten spoke on "Fitness for the National Emergency".

NINTH DISTRICT MEDICAL SOCIETY

The Ninth District Medical Society held a Symposium on Sulfonamides on April 10 at the Vance Hotel in Statesville. The meeting began at 2 p. m., and the following program was presented at the afternoon session:

1. "Effects of Sulfonamides as Shown by X-Ray"—Dr. L. W. Oehlbeck, Morganton.

Discussion: Dr. F. G. Sigmon, Salisbury.

2. "Importance of Certain Laboratory Procedures in the Use of the Sulfonamides"—Dr. Erle B. Craven, Jr., Lexington.

Discussion: Dr. C. C. Carpenter, and Dr. J. C. Reece, Winston-Salem.

3. "Sulfonamides in Urology"—Dr. J. W. Frazier, Salisbury.

Discussion: Dr. G. F. Busby, Salisbury, and Dr. J. D. Whaley, Hickory.

4. "Sulfonamides as Applied to Eye, Ear, Nose and Throat Problems"—Dr. G. M. Billings, Morganton, Dr. M. B. Clayton, Statesville.

5. "Sulfonamides in Pediatrics"—Dr. Dan Stewart, Hickory.

Discussion: Dr. Caroline McNairy, Lenoir.

Dr. J. W. Vernon was toastmaster at the dinner meeting at 7 p. m., and Dr. Jerome Harris, of the Department of Pediatrics, Duke University, was guest speaker. His subject was "The Use of the Sulfonamides".

Officers of the society are: President, Dr. W. D. McLelland, Mooresville; vice president, Dr. S. A. Rhyne, Statesville; district councillor, Dr. I. E. Shafer, Salisbury; secretary-treasurer, Dr. J. Sam Holbrook, Statesville.

THERMAL BELT MEDICAL SOCIETY

The Thermal Belt Medical Society met at Marion, N. C., on Thursday, April 17, at 7 p. m. After dinner the following program was presented:

"Migraine"—Dr. Phillip Padgett, Kings Mountain.

"Tuberculosis"—Dr. S. M. Bittinger, Black Mountain.

"Thoracoplasty"—Dr. Julian Moore, Asheville.

BUNCOMBE COUNTY MEDICAL SOCIETY

Dr. John Elliott of Salisbury was the guest speaker at a dinner meeting of the Buncombe County Medical Society, held in the S & W Cafeteria on April 7. His subject was "The Preparation and Use of Blood Plasma". At the second monthly meeting, held on April 21, a paper on "Pulmonary Hemorrhage" was read by Dr. Karl Schaffle, and discussed by Dr. S. M. Bittinger and Dr. I. H. Wagner.

GUILFORD COUNTY MEDICAL SOCIETY

The Guilford County Medical Society met at the King Cotton Hotel on April 3 at 6:30 p. m. Dr. Robert B. Lawson, Pediatric Consultant in the School of Public Health at the University of North Carolina, gave a talk on "Preventive Methods in Pediatrics", with special reference to the use of vitamin K in hemorrhagic disease of the newborn. A film entitled "Studies in Human Fertility—Methods for the Control of Conception", produced by Ortho Products, Incorporated, was shown.

MOORE COUNTY MEDICAL SOCIETY

The Moore County Medical Society has donated \$50.00 to the Committee on Medical and Surgical Supply for the purpose of buying surgical instruments and other supplies for the British war hospitals.

MECKLENBURG COUNTY MEDICAL SOCIETY

On April 1 the Mecklenburg County Medical Society heard the program which was originally scheduled for March. Dr. T. W. Baker spoke on "The Mechanism of Cardiac Pain and Its Differentiation From Chest Pains of Radicular Origin", and Dr. Joseph Elliott gave a "Discussion of the Diagnosis of Skin Disease, With Kodachrome Demonstrations". At the second monthly meeting, held on April 15, Dr. James Gibbon spoke on "Surgical Lesions of the Colon", and Dr. Paul Sanger discussed "Experiences with Sulfaguanidine".

NORTH CAROLINA NEUROPSYCHIATRIC ASSOCIATION

The North Carolina Neuropsychiatric Association met at the Duke Hospital on Friday, March 28, 1941, with Dr. Raymond S. Crispell, of the hospital, as the chairman of arrangements and program. The program started at 2 p. m. with an inspection of the new out-patient and in-patient psychiatric clinics at the Duke Hospital and with demonstrations of electroencephalographies ("brain waves"). This was followed by a scientific meeting at 2:45 p. m. in the Duke Hospital amphitheatre, with papers on "Electroencephalography" by Dr. Hans Loewenbach and on "The Rorschach Tests" by Dr. Edward Stainbrook, both of the psychiatric staff of the Duke Hospital. Dr. W. P. Beckman, of the Columbia, S. C., State Hospital, spoke on "Problems and Progress in Mental Hygiene in South Carolina." Dr. Beckman is in charge of all the out-patient work that is conducted in various cities in South Carolina by the S. C. State Hospital System. The last presentation of the meeting was by Dr. Walter Freeman, of Washington, D. C., on "Indications, Procedures and Results in Prefrontal Lobotomies."*

There are fifty-six active members of the North Carolina Neuropsychiatric Association, all of whom are practicing physicians in North Carolina, members of the North Carolina Medical Society, and engaged or interested in the treatment and prevention of mental and nervous diseases.

Among the aims and functions of the Association is the extension of the latest knowledge concerning mental and nervous diseases, not only to its own members, but to the medical profession at large. In addition, the Association has always been interested in the applications of neuropsychiatry and in the prevention, as well as the treatment, of mental and nervous diseases and in the closely related and applied subject of mental hygiene.

The officers of the Association for 1940-41 were: President, Dr. Mark A. Griffin, of Asheville; Vice President, Dr. Archie A. Barron, of Charlotte; Secretary-Treasurer, Dr. Malcolm Kemp, of Pinebluff. The officers elected at the recent March meeting for the ensuing year were: Dr. Archie A. Barron, President; Dr. Frank B. Watkins, of Morganton, Vice President; Dr. R. Burke Suitt, of Durham, Secretary-Treasurer. At the last meeting ten new active and three new honorary members were elected.

While the meeting in the Duke Hospital amphitheatre on March 28 was of a somewhat technical and scientific nature, it was open to all of the medical profession, also to a few interested laymen. There was an attendance of over one hundred, and the meeting was concluded with a collation at the home of Dr. Crispell on the West Duke Campus.

*This paper is to be published in the NORTH CAROLINA MEDICAL JOURNAL.

THE SECOND AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY

The Second American Congress on Obstetrics and Gynecology will be held in St. Louis, Missouri, April 6 to 10, 1942. All of the meetings and both the Commercial and Educational and Scientific Exhibits will be held in the Public Auditorium.

The general plan for the program will be much the same as that of the first Congress, which was held in Cleveland, September 11-15, 1939, with sectional meetings for the various groups (nurses, public health administrators, educators, and physicians), general sessions for all members attending the Congress, and round tables. There will be evening sessions open to the general public.

Admission to the Congress will be by individual membership card only. These may be secured by payment of the five dollars registration fee, any time after September 1, 1941.

For further information, apply to the Chicago office of the Congress, 650 Rush Street.

EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted at Cleveland, Ohio, by the entire Board from Wednesday, May 28, to Monday, June 2, 1941, inclusive, prior to the opening of the annual meeting of the American Medical Association in Cleveland.

Formal notice of the time and place of these examinations will be sent each candidate several weeks in advance of the examination dates.

The Board requests that all prospective candidates who plan to submit applications in the near future request and use the new application form which has this year been inaugurated by the Board. The Secretary will be glad to furnish these forms upon request, together with information regarding Board requirements. Address Dr. Paul Titus, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

This Board will hold its annual dinner for Diplomates, and others interested in the work of the Board, on Wednesday evening, June 4, 1941, at the Wade Park Manor Hotel, Cleveland, Ohio, immediately following the close of the Part II examinations. Diplomates certified at the preceding days' examinations will be introduced personally, and there will be several speakers.

Tickets at \$3.25 each may be obtained from Dr. Joseph L. Baer, chairman, 104 South Michigan Avenue, Chicago, Illinois, or at the Registration Desk during the examination period.

POSTGRADUATE COURSES IN OBSTETRICS

The Illinois State Department of Public Health and the Children's Bureau, U. S. Department of Labor are sponsoring ten 4-weeks courses in obstetrics at the Chicago Lying-in Hospital during the fiscal year 1941-1942. Only a limited number of physicians will be accepted for each course. The only cost to the individual is for room and board, and \$25.00 (\$10.00 of which is refunded at the completion of the course). Applications and inquiries should be addressed to: Post-Graduate Course, Department of Obstetrics and Gynecology, 5848 Drexel Avenue, Chicago, Illinois.

COURSE IN ELECTROCARDIOGRAPHY

The Michael Reese Hospital of Chicago offers a two weeks' intensive course in electrocardiography by Dr. Louis N. Katz, Director of Cardiovascular Research, from August 18 to August 30. This course is offered for the general practitioner. An hourly program of the course will be sent on request to Michael Reese Hospital, Cardiovascular Department, 29th and Ellis Avenue, Chicago, Illinois.

WARNING

SULFATHIAZOLE-WINTHROP

In the manufacture of tablets of Sulfathiazole-Winthrop, "M.P." control series (December, 1940), some of the tablets were accidentally contaminated with phenobarbital. Immediately upon discovery of this, active steps were taken by us to recover this entire series.

Our attempt to assure the return of all tablets of the "M.P." control series is being continued, in conjunction with the nationwide effort of the U. S. Food and Drug Administration and other public agencies. In the interest of public safety, your prompt cooperation with us and with these public agencies in this search will be greatly appreciated, as these contaminated tablets may be dangerous.

Please examine the mark on every package of our sulfathiazole tablets, and return to us immediately for exchange any package marked with the letters "M.P." If you have dispensed tablets from bottles bearing these control letters, will you kindly endeavor to recover all such tablets which have not been consumed.

Needless to say, this occurrence is a matter of profound regret to us. Nothing of this nature has ever happened before in our history, and we are taking extraordinary precautions to prevent a recurrence. For more than two decades we have served the medical and pharmaceutical professions. During that period we have earned a reputation for high standards and outstanding products which we shall strive faithfully to maintain.

WINTHROP CHEMICAL COMPANY, Inc.

NEWS ITEM FROM THE COOPERATIVE MEDICAL ADVERTISING BUREAU

As much as we individually might be in sympathy with the "Bundles for Britain" movement, one recent phase of it hardly has our approval.

At several points in the country there has been a movement to collect the samples left by pharmaceutical detail men in physicians' offices and include them in the shipments for British Relief. This is an expensive and uncontrolled way of supplying pharmaceutical products.

Most all of the pharmaceutical manufacturers have individually donated supplies with vitamin capsules and other needed pharmaceutical products to the British Relief at no charge.

The packaging of a sample increases the cost and if these samples are collected and sent to Britain, then the purpose for which they were intended, that is, for the use of physicians, is not accomplished, and the heterogeneous material that reaches British Relief probably would have little value. Many samples left physicians would be dangerous if used indiscriminately without the advice of a physician.

In some cases individual City and County Medical Societies have been asked to cooperate with the collection of these samples. It is our opinion that such cooperation should be refused for the obvious reasons stated.

BOWLING

Plans are on foot to have a bowling tournament during the next meeting of the American Medical Association. It is hoped that teams can be formed representing various states. Physicians who are interested in bowling should contact Dr. Lewis W. Bremnerman, 1709 West 8th Street, Los Angeles, California.

NEWS NOTES

Dr. T. R. Huffines of Asheville, and Dr. Preston Nowlin of Charlotte have been certified by the American Board of Urology.

* * *

Dr. L. W. Kelly and Dr. Andrew Blair, of Charlotte, have been elected Fellows in the American College of Physicians.

* * *

Dr. H. L. Sloan of Charlotte has been elected to membership in the Phi Beta Kappa Associates, a group with a membership limited to two hundred which has been organized from the 90,000 Phi Beta Kappa members.

* * *

Dr. W. E. Overcash of Southern Pines is moving to Boston to do medical practice.

* * *

Dr. John Young of Asheville and Dr. Nathan Matros of Oteen have been called into active service by the Navy. Dr. Young is assigned to the Parris Island Marine Base, S. C., and Dr. Matros to the Naval Aviation Center at Corpus Christi, Texas.

* * *

Dr. M. G. Stutts of Southern Pines is joining the Army.

Squibb Offers Water-Soluble Vitamins in Single Wafer

Deficiencies of the vitamin B complex and vitamin C (the water-soluble vitamins), it is now believed, are commonly associated, and it is for that reason E. R. Squibb & Sons, New York, developed Vitamin B Complex Wafers with Vitamin C, which they recently placed on the market. Each of these wafers, which have a malted milk flavor and are very palatable, contains 2 gm. of high potency brewers' yeast especially cultured for use as a source of the whole natural vitamin B complex, and 7.5 mg. crystalline ascorbic acid. Each wafer has the vitamin activity of:

100 U.S.P. XI (Int.) units of thiamine (vitamin B₁)

150 micrograms riboflavin (vitamin G; B₂)

130 micrograms (approx.) pyridoxine (vitamin B₆)

800 micrograms (approx.) pantothenic acid (a filtrate factor)

150 U.S.P. XI (Int.) units (7.5 mg.) ascorbic acid (vitamin C)

Also contains: 1.1 gm. protein; 1.6 carbohydrate, 0.1 gm. fat, 0.1 gm. mineral (ash)

Intended principally for prophylactic use, Squibb Vitamin B Complex Wafers with Vitamin C are of particular value where acceptability is an important factor. They are used as a diet supplement in the prevention or treatment of deficiencies in the water-soluble vitamin B complex and vitamin C. Three or more are taken daily as the physician prescribes.

Squibb Vitamin B Complex Wafers with Vitamin C are supplied in bottles of 50 and 100 wafers.

WOMAN'S AUXILIARY

MINUTES OF THE EXECUTIVE COMMITTEE

Spring Meeting, April 4, 1941

The Executive Board of the Auxiliary to the Medical Society of the State of North Carolina met at Lenoir at the home of Mrs. Clyde R. Hedrick, president, on Friday, April 4, 1941, at 10 a. m. There were short meetings of various committees.

A delicious luncheon was served at the Carlheim Hotel, with Mrs. Hedrick hostess to the members of the Board, the Caldwell County Auxiliary, and Dr. Caroline McNairy, member of the Advisory Board.

Following the luncheon the meeting was called to order by the president, Mrs. Hedrick. The roll was called and the minutes of the Fall Executive Board meeting were read by the secretary pro tem. The corresponding secretary was instructed to write notes to Mrs. P. P. McCain, Mrs. J. Roy Hege and Mrs. C. F. Strosnider, expressing regret at their absence due to illness. The following reports of officers were given: Mrs. Hedrick, president, stated that she would not give a full report now, since that would be made at the State meeting of the Auxiliary. She said that she had had a pleasant year working with the Auxiliary and appreciated the help and cooperation of her corresponding secretary. Mrs. Sidney Smith, president-elect, gave a splendid report showing that she has given much time and thought in the preparation for her work as president. In the absence of Mrs. J. H. McNeill, second vice president, her report was read by Mrs. Kent. She reported that a nurse is occupying the McCain Bed and a doctor the Stevens Bed. Both were remembered with gifts at Christmas. A letter from Mrs. Stevens was read expressing her sincere thanks to the Auxiliary for naming the Stevens Bed in honor of her late husband, Dr. M. S. Stevens.

Mrs. J. S. Hooker, third vice president, reported that only one request for a student loan had been made this past year. This loan was granted. Mrs. Hooker was appointed to work out some plan to collect on loans now due.

Mrs. E. C. Judd, treasurer, reported a balance of \$232.51 in the general expense account; \$370.17 in the bed up-keep fund;

\$1864.81 in the McCain Endowment Fund; and \$561.52 in the Student Loan Fund. Mrs. Smith asked that the Executive Board give Mrs. Judd a rising vote of thanks for her splendid work.

The reports of chairmen were as follows: Mrs. Kendall, *Bulletin* Chairman, reported she had secured fourteen subscriptions. She made a plea that more publicity be given the *Bulletin* in order to interest more Auxiliary members in subscribing to this official publication of the National Auxiliary. Mrs. A. A. Kent, Jr., Chairman of Press and Publicity, reported that articles of interest had been published in the Auxiliary space of the NORTH CAROLINA MEDICAL JOURNAL. She asked that each one help secure material for the press and publicity department. Mrs. J. A. Elliott, Legislation Chairman, gave a full and interesting report of her year's work.

Reports were given by the following councillors: Mrs. P. G. Fox, District 6; Mrs. Harry Winkler, District 7; Mrs. J. W. Vernon, District 9.

Of particular interest was the outstanding accomplishment of the Wake County Auxiliary in raising \$236.77 by sponsoring a bridge tournament. Mrs. Hedrick urged that each councillor contact every eligible doctor's wife in her district and invite her to join the Auxiliary.

As new business the acting secretary read the tentative program for the Auxiliary Meeting at the State Convention in Pinehurst, May 19-21. The guest speaker is to be Mrs. V. E. Holcombe of Charleston, West Virginia, president of the National Auxiliary. Mrs. Smith made a motion that Mrs. Judd select some one to register and collect dues from any eligible doctors' wives at the State meeting in Pinehurst. Mrs. P. G. Fox seconded the motion. The motion was carried that Mrs. McGeachy act as Chairman of Hospitality and that each Board member be a member of this committee, with badges so designating them. Mrs. Smith told of the plan for war relief work as planned by State Medical Society for surgical supplies. The Auxiliary is to work under the direction of State Medical Society to get surgical supplies that are so urgently needed in the warring countries.

Mrs. Winkler moved that the Executive Board go on record as desiring to cooperate with the State Medical Society in the "Medical and Surgical Supply Committees of

America for Aid to Britain and Other Democracies" as needed. Mrs. Vernon seconded the motion. The motion was carried.

Mrs. Smith recommended that a State Chairman be appointed for this committee, who would be a member of Executive Board.

Mrs. Hedrick announced the meeting of American Medical Association and Auxiliary in Cleveland, Ohio, June 2-6, 1941, stating that she expected to be present, and hoped that others would attend. Mrs. Hedrick made the following requests: First, that each member of the Board bring her notebook up to date and have it ready to turn over to her successor at the Pinehurst meeting; second, that the names of any deceased doctors' wives be sent to Mrs. J. R. Terry, Scrapbook Chairman.

Respectfully submitted,

BESSIE BYERLY,

Recording Secretary, pro tem.

ANNOUNCEMENT

Mrs. V. E. Holcombe of Charleston, West Virginia, president of the Woman's Auxiliary to the American Medical Association, will be guest speaker at the State Auxiliary meeting in Pinehurst, May 19-21. New and old members of the Woman's Auxiliary to the Medical Society of the State of North Carolina come to Pinehurst for our State convention and learn your Auxiliary and enjoy it by taking part in its activities.

MRS. ALFRED A. KENT, JR.,
Press and Publicity Chairman.

ENTERTAINMENT FOR WOMEN

AUXILIARY GENERAL CHAIRMAN OF CONVENTION

Mrs. P. P. McCain.....Sanatorium

RULES AND PROCEDURE

1. Register before first session and receive badge. \$1.00 registration fee for all who do not present 1940-41 membership card.

2. Wear badge to all functions.

3. Please register promptly for various events.

4. Visiting women are requested to drive their own cars if possible.

5. Wives of Fort Bragg Medical Officers and Medical Staff members of the Fayetteville Veterans Facility are to be special guests and should obtain their "guest" badges upon arrival at the Carolina Hotel.

MONDAY, MAY 19

*3:00 p. m.—Drive to State Sanatorium.

Tea—Mrs. P. P. McCain's residence, courtesy of Sanatorium doctors' wives.

8:30 p. m.—Bermuda Movie, courtesy Dr. M. A. Pittman, Pine Room.

"Keno", Pine Room.

10:00 p. m.—Dance, North Carolina Public Health Association, Ball Room.

TUESDAY, MAY 20

9:00 a. m.—Executive Board Meeting, Pine Room.

10:30 a. m.—Annual Meeting, Pine Room.

*2:00 p. m.—Movies, Southern Pines.

or

*4:00 p. m.—Bridge, Pine Room.

8:30 p. m.—President's Reception.

10:00 p. m.—Annual Medical Society Ball.

WEDNESDAY, MAY 21

9:30 a. m.—Drive to Orchid Gardens or Neighboring Antique Shops.

* Must register for these events.

NOTICE

This is the *Last Call* for reservations for the Nineteenth Annual Convention of the Woman's Auxiliary to the American Medical Association which will be held at Hotel Carter in Cleveland, June 2-6. All Cleveland extends a hearty welcome to you!

In Memoriam

C. O. DELANEY, M. D.

1895-1940

After an illness of a few hours, Dr. Charles O. DeLaney, esteemed and honored member of the Forsyth County Medical Society, died on the night of December 15, 1940, at his home. In his going the medical fraternity of Winston-Salem and Forsyth County, and the civic community as well, have suffered an inestimable loss. Dr. DeLaney went his way among us in a way that reflected honor on himself and his profession. He was well trained in his branch of the profession, and never neglected an opportunity to improve his methods and to enlarge the scope of his knowledge. More than these things were the qualities within him which endeared him to all of us as a friend and a comrade. Of him it could be said that he was a man first and a physician afterwards. His age was but 45 at his death, but he had written his name large in his profession and his community.

Dr. DeLaney attended the University of North Carolina and afterwards entered the study of medicine at Jefferson Medical College, graduating from

that institution in 1919. He served first as resident and afterwards as acting medical director of the Sacramento County Hospital, Sacramento, California, from 1919 until 1921. From 1922 until 1924 he was in practice in Gastonia, N. C. He had been in practice in Winston-Salem from 1924 until his death. He was a member of the Forsyth County and the North Carolina State medical societies, and of the American Medical Association. He held membership in the American College of Surgeons, the Southern Medical Association, the North Carolina and American urological societies, and in the American Neisserian Medical Society. He was past president of the North Carolina Urological Society. He was an active member of the staffs of the North Carolina Baptist, the City Memorial, and the Kate Bitting Reynolds hospitals.

The membership of the Forsyth County Medical Society is especially bereft in the passing of Dr. DeLaney. To us he was professional colleague, friend, and valued consultant. Though he has left our midst his mark has been made, and the memory of his good works lives on. To his widow and other members of his family we extend heartfelt condolences, and a sincere expression of sadness at the passing of this colleague from among us.

Submitted by
Elbert A. MacMillan, M.D.

CHARLES E. MOORE, M. D.

Dr. Charles E. Moore, of Wilson, died of pneumonia on February 12, 1941. He was believed to have been eastern North Carolina's first surgeon. A native of Whitakers, Dr. Moore came to Wilson County to practice after graduation at Bellevue Hospital, New York City. He helped to found the old Wilson Sanatorium, first hospital in the eastern part of the state where surgery was practiced. In 1913 he helped found what is now the Woodard-Herring Hospital.

DENIS R. WOLFF, M. D.

WHEREAS our Heavenly Father in His Infinite Wisdom has seen fit to remove from this life our beloved brother, Denis R. Wolff, of Greensboro, a most worthy member of the Guilford County Medical Society; one who was held in high esteem by his colleagues for his professional competency as a physician and surgeon; one who was generous, charitable and widely beloved, who gave without reservation his time and effort to help many who could only reward his services with gratitude; one who night and day ministered unto the sick without regard to color or creed, time or place, or to the elements; one who never considered his physical capacity or limitations when he could be of service; one whose working power and physical reserve was phenomenal; one who had wide interests in the field of medicine and special proficiency in general surgery; one who on account of his large practice and devotion to duty neglected the pleasures of needed vacations and rest; one who has earned at great personal sacrifice a magnificent reward in heaven.

AND WHEREAS we feel very keenly the loss sustained in the untimely death of our departed friend.

NOW THEREFORE, be it resolved by the Guilford County Medical Society, that we extend our sympathy to his wife and family, and that copies of these resolutions be spread upon our minutes and that a copy be furnished the family of our departed brother.

Submitted by
Claude T. Whittington.

GEORGE WILLIAM KUTSCHER, JR., M.D.

It is given to some men to live a long useful life, before retiring to enjoy a ripe old age. To others, not so fortunate, the end of a useful life is a dragged out, distressing anti-climax. To still others, death comes in the midst of a life of active service, at the very high tide of the battle.

It was the privilege of George William Kutscher, Jr., to be numbered among those who go down fighting, in the thick of the struggle. He had won the respect of every one of his colleagues, and the affection of many. He had attained an enviable place in the social and religious life of the community, in the struggle for civic improvement and beautification, in the warfare against disease and unhappiness. When the summons came for him, he was still in the front line of aggressive warfare for what men by common consent call the best things. He never withdrew into a quiet sector to get ready for a new skirmish. He went down fighting.

He had not come up the easy way. Laxness, slackness, tardiness, undependability, were not to be found in his equipment. He did not censure others for having them; as for himself, he would tolerate none of them. Others might accept civic honors and neglect the duties that go with them; or try to cultivate a special bloom by happy-go-lucky optimism instead of by fertilizing and spraying and hoeing—he had no comment to make. As for him, the long hours in the committee room, at night, the back-breaking toil in the garden, the grueling search for the cause in the laboratory or at the bedside of his little patient—these things that did not show, made possible the results for which his colleagues, his city, and the state he adopted, now know him, and for which they honor him as they grieve over his loss.

His last battle was the toughest he ever knew. Only those who fought with him through those long days and nights of pain and discouragement and utter weariness—his doctors, his nurses, his friends, most of all his wife—can even guess at what that last fight cost him. But he did not falter. Grit, a bull-dog determination to take whatever came, at whatever cost in blood and toil and sweat, these were no new reinforcements to be called upon at the last; they were old trenchmates ready to move in and stand shoulder to shoulder with him when he needed them. They never failed him.

The newspapers and the medical journals have recorded the places of honor he attained, the services he rendered to his chosen profession, medicine, and the branch of it he so greatly advanced, pediatrics. It is for us, fellow members of his in the Buncombe County Medical Society to which he gave the best he had, especially in the generous service as secretary during the past six strenuous years, to place on record our love and appreciation of the friend who fought our battles with us and for us. This we do gladly tonight. As for the little children for whose lives and health and happiness he battled just as unwearyingly as he carried on every other fight in which he ever found himself, there is no need for them to make such a record. It was already made during the years he was with them; and it is to be found in the grateful hearts of their mothers and fathers.

—Frank Howard Richardson, M.D.,
From the Bulletin of the Buncombe County Medical Society.

BOOK REVIEWS

The Avitaminoses. By Walter H. Eddy, Ph.D., Professor of Physiological Chemistry, Teachers College, Columbia University; Director, Bureau of Foods and Sanitation, *Good Housekeeping Magazine*; and Gilbert Dalldorf, M.D., Pathologist to the Grasslands and Northern Westchester Hospitals, Westchester County, New York. Second Edition. Pp. 519. Price \$4.50. Baltimore: The Williams and Wilkins Company, 1941.

In presenting the second edition of this book, the authors have rewritten it and added fifty per cent more material in order to bring in the many advances of the last three years. As Dr. James Ewing says in the Foreword, it is "the first comprehensive treatise in English on the pathological responses to vitamin deficiencies." It is full of interest for the practitioner, since all the known vitamin deficiencies are discussed from the clinical standpoint, as well as from the standpoint of the pathological changes brought about. After preliminary chapters on vitamins and disease, the chemical nature of the vitamins, vitamins and cellular oxidation, and vitamin requirements, the known individual vitamins are discussed. The results of their deficiencies are given. A final chapter in this first part is on vitamins and infectious diseases. Part II consists of Appendix A, laboratory tests useful in the study of deficiency disease, and Appendix B, the vitamin content of foods.

Full bibliographies are added to each chapter, though the text itself is so comprehensive that these will hardly be needed. The book makes available to all who are interested the knowledge of vitamins up to date.

Physical Medicine. By Frank H. Krusen, M.D., F.A.C.P., Associate Professor of Physical Medicine, the Mayo Foundation, University of Minnesota; Head of the Section on Physical Therapy, The Mayo Clinic; Member of the Council on Physical Therapy of the American Medical Association. 846 pages with 351 illustrations. Philadelphia and London: W. B. Saunders Company, 1941. Price \$10.00.

The author is probably the foremost exponent of physical therapy, and his book is complete and authoritative. His five divisions of thermotherapy, light therapy, electrotherapy, hydrotherapy, and mechanotherapy are fully discussed in their relation to the various medical specialties. He evaluates the various methods fully and gives his own choice of treatment as well as that of others.

In outlining the organization of a physical therapy department he emphasizes the importance of obtaining the proper personnel and describes the educational requirements of physical therapy technicians.

The chapter on the history of physical therapy makes interesting and pleasant reading. The illustrations are excellent, the bibliography complete. The author should be commended for the excellent index. The book is highly recommended, not as a source for the proper method of treating disease, but as a text and a reference for those who are teaching physical therapy and as a guide to the technician in this field of medicine.

Techniques of Conception Control. By Robert Latou Dickinson, M.D., Former President, American Gynecological Society; and Woodbridge Edwards Morris, M.D., General Medical Director, Birth Control Federation of America. Paper covers. Pp. 56. Price \$.50. Baltimore: The Williams and Wilkins Company, 1941.

This little pamphlet tells clearly and concisely the why and the how of birth control. Every method is discussed, with its advantages and disadvantages. Fifty illustrations add to the lucidity of the text. To the doctor who wants to know what to tell his patients who seek and need contraceptive information, it can be recommended as authoritative.

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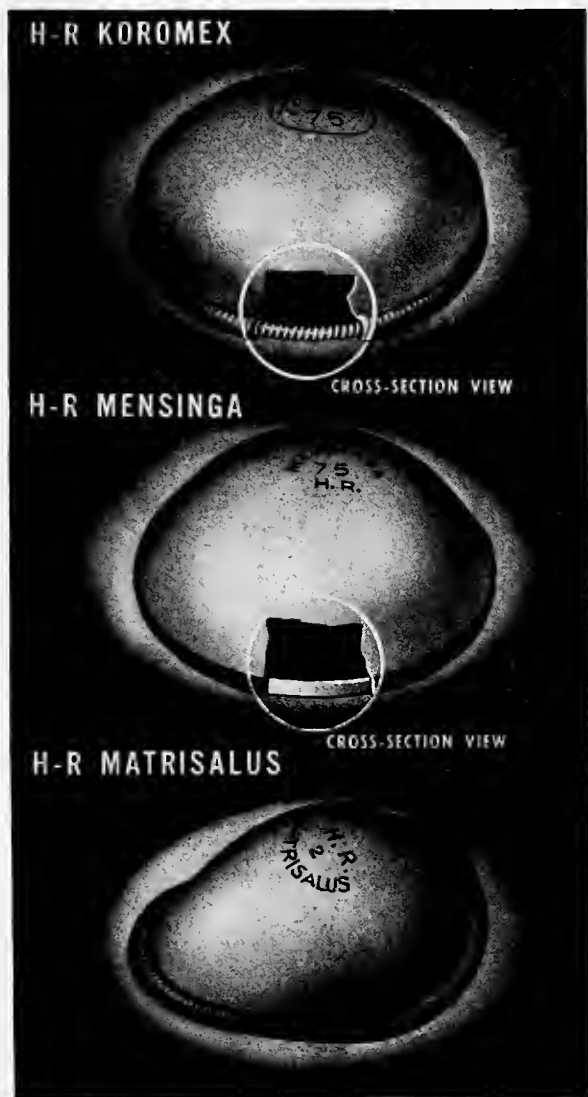
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HUBERT B. HAYWOOD, M. D.

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PRESIDENT'S ADDRESS

Medical Problems in North Carolina

HUBERT B. HAYWOOD, M. D.

RALEIGH

The medical problems of North Carolina have a geographical, historical and economic setting. Our diseases are largely those of the north temperate zone in which we live. Our population in 1760 consisted of 45,000 English, 40,000 Scotch, 15,000 Germans, and 31,000 Negroes. Our racial stock for the white race was entirely northern European, and was second to none. Today our population numbers 3,500,000, of which Negroes comprise about one third. In 1865 three hundred and fifty thousand Negro slaves were set free. Economic collapse followed the Civil War, and the military rule which followed lasted three years. The Negroes were poverty stricken, ignorant, and had selfish and bad leadership. The large plantations were broken up and a system of farm tenancy or share cropping came into being and has been imposed on the state ever since. Under this system of agriculture money crops, cotton and tobacco, were practically the only ones raised. Only a limited amount of food crops, entirely insufficient in amount and content of nutritional values, were cultivated. Poor prices prevailed, and the small farmer became more and more impoverished. Nutritional diseases which formerly had not existed came into being. Poor housing, lack of screens, bad water supplies, indifferent sanitary conveniences have made this numerical majority of our people susceptible to all types of disease. Two thirds of our people were rural dwellers in 1931. Their birth and death rates have been high. The Negro birth rate for 1939 was 24.2 per

thousand, and the death rate was 11.1 per thousand. The white rate was 21.4 per thousand for births and 8.1 for deaths. According to the census figures of 1930 there was a total of 33,564 deaths in North Carolina. Of these, 7,494 were children under 10. In the United States as a whole in the same year there were 1,381,394 deaths, of which 162,996 were under 10 years of age. Thus in North Carolina the death rate for children under 10 was 22.3 per cent, and in the United States only 11.8 per cent. It has been estimated that 75 per cent of the deaths of children are preventable. In 1940 we had 119 deaths from diphtheria, a preventable disease, and one against which the law requires vaccination. On September 3, 1940, there were 17,150 crippled children on the state register for orthopedic care. Approximately one third of our blind are the children of blind parents, and in the majority of instances are dependent on the charity of the communities in which they reside. In 1939 there were 78,957 births registered in North Carolina. Of this number 6,503 were illegitimate. Since 1900 there has been an improvement in education, transportation, and agriculture. With this increased prosperity has come a vast betterment of health conditions in the state, but the low income groups still comprise the majority of our population. They are the ones most in need of medical care, and their economic condition is such that the food which they have and the surroundings in which they live prevent them from responding properly when medical care alone is furnished them. I cite these facts as a background for the medical problems which face us today.

President's address to the Medical Society of the State of North Carolina, First General Session, Pinehurst, May 20, 1941.

The human race has developed through the countless ages under the laws of heredity by the survival of the fittest. The weak and defective have perished. Only the physically strong and mentally alert could withstand the severe conditions of early life and survive to become the mothers and fathers of the next generation. Modern civilization, human sympathy and charity have intervened in nature's plan. The weak and defective are now nursed to maturity and produce their kind. Under nature's plan we breed principally from the top. Today we breed from the top and bottom, but more rapidly from the bottom. Today the most intelligent and efficient, the strongest strains of blood, as a rule, limit their children to a point that means extinction of a family in a few generations. In North Carolina only three hundred and fifty people were sterilized in the last two years. The laws should be broadened and transmitters of hereditary diseases, the hereditarily blind, and many more mental defectives should be included. The criminal insane and the repeaters in our prisons could well be put into this classification. Over half of our 12,000 prison and penitentiary inmates are repeaters and are infected with venereal diseases on admission. If we accept the intelligence quotient of 70 as an index of the test of mental deficiency, it is estimated that we will find 58,549 mentally handicapped children in North Carolina. Maladjustment in school and after-life is inevitable in this group, which comprises about 5 per cent of the children in the state. The fact that there is no definite or special program for the defective in the state school program contributes to delinquency. Many juvenile delinquents come into the courts. The large proportion of the Negroes are laborers—usually of the farm tenant class—or else are crowded into the towns and living in poverty. They are becoming increasingly susceptible to the two chronic diseases which most commonly affect mankind—tuberculosis and syphilis. Many other constitutional, mental, and hereditary diseases follow in the train of these two. In 1500 the great prevalence of syphilis in Italy and France changed the whole life and the map of southern Europe. It may well affect the Negro race in the same way. This condition is also bound to have an adverse effect on the white race. The close proximity of the two races will increase the prevalence of these diseases among the whites. A further

extension of birth control information to this group which breeds from the bottom is a necessity. Over 30 per cent of the men of military age examined for the draft have been declined for service because of defects, either congenital or acquired. This is further evidence that we are breeding from the bottom instead of the top. It is an irrefutable biological fact that a damaged germ plasm produces weakened tissues in the human body. Nutritional diseases, syphilis, mental diseases, alcohol, and poverty are weakening the germ plasms of our people.

We have an increasing number of mentally ill in North Carolina, and a rising tide of mental hospital commitments. Until now our effort has been to give these patients institutional care, and but little concentrated or directed effort has been made to eradicate mental sickness at its very beginning. In 1933 only five states in the Union had a greater ratio of patients to personnel in mental hospitals than North Carolina. Our state's average is 10.8 to 1, while in the United States the average was 6.6 to 1. A hospital approved by the American Psychiatric Association has one physician to every 150 patients. Early admission after diagnosis means a shorter stay in a mental hospital, with much better prospects of cure. Over half of the patients admitted to mental hospitals have been ill for a year or more before admission. Our three mental hospitals are crowded and there are waiting lists. The proportion of inebriates in our hospital population is higher than in many other states. The successful fight to conquer pulmonary tuberculosis furnishes the outline of a campaign which could be used to combat mental disease. Where such a plan has been tried brilliant results have been achieved. Our state mental health needs to be and could be improved by more generous contributions from the state, thus enabling us to do preventive work as well as increasing our facilities and personnel for treating those already ill.

We are familiar with the estimates which have been made of the enormous amount of free work and service rendered by the generous, hard working practitioners of the nation, but we cannot be sure that this vast amount of charity is dispensed in a way that is best for the patient or the doctor. It is admitted that it is nearly always possible to hospitalize and treat those patients with acute emergency conditions or far advanced

illnesses. Frequently, however, these are the patients who require the least study. The many patients not ill enough for hospital study are the ones who present the major diagnostic problems. Nearly two thirds of the individuals in this country are in families with an annual income of less than \$1500 a year, and half of these must live on \$800 a year. Those in the upper brackets of these groups can afford medical care; those in the lower brackets can pay for only a part of their medical needs, or for none at all. Medical and surgical care is now being offered to low income groups by several well managed and financially sound hospital insurance associations now in successful operation in North Carolina. A large number of individuals and groups of individuals carry this insurance. The Medical Society of the State of North Carolina has nothing in its Constitution and By-Laws prohibiting this type of service, provided it is endorsed by the medical society in the county where it is to be put in practice. Doubtless, the fields and endeavors of these associations will be broadened to meet the needs of the times.

In 1939 North Carolina ranked forty-fifth in the United States in hospital beds of all kinds, having 5.05 beds per 1000 inhabitants. In 1936 North Carolina ranked forty-sixth among the states in the ratio of physicians to population, with one practicing physician per 1,346 inhabitants. Durham county has one practicing physician for every 261 inhabitants; Tyrell has one for every 5,164 inhabitants. There are 141 colored physicians in the state. In the fourteen counties in which they serve they represent one physician for every 5,890 of the rural population, and one for every 1,699 of the urban population. The other fifty-six counties without negro physicians contain 88,105 Negroes. The problem for North Carolina is how to meet the medical needs of our state. We cannot redistribute our physicians, as economic and scientific factors influence their location. The state of Georgia, which has a distribution of population somewhat similar to our own, has proposed legislation to finance the education of physicians who obligate themselves to practice for four years after graduation in communities assigned to them by the medical authorities of the state.

The care of the indigent is, of course, the weakest point in our program. No country

has as yet found a real solution to the problem of providing equal medical care to a population with incomes ranging from indigency to affluence. Compulsory insurance to take care of sickness meets a small part of the problem by giving the low income groups a superficial service paid for by distributing the burden over both well and sick, and among employees, employers, and the government, but it leaves the indigent untouched. There is a growing class of medically indigent in North Carolina. Some are worthy; many are not. Good food, good housing, and good sanitation are lacking among them. These things are fundamental to good health and useful citizenship. To meet the problems these families present, it is necessary to have generous appropriations of tax funds spent under trained medical supervision and through medical centers, and an expanded plan of cooperation between health officers and local medical societies. Subsidies and grants to pay reasonable medical fees, to establish new hospitals, and to maintain and improve old ones seem imperative to a balanced program to care for the diseased and to rehabilitate the indigent. State medicine, as largely public health medicine, is not free medicine, for it is paid for by the money collected from taxpayers of the state and nation. State medicine reaches a class of citizens who would not otherwise receive medical care, and who would spread the disease among themselves to other people. This virtue alone would justify state medicine, but it is more far reaching than this. In practicing preventive medicine, it is in many instances also practicing curative medicine. The sum of \$875,169 was made available by the federal government in 1940 to the North Carolina State Board of Health. In 1939 the Legislature allotted a total of \$438,370 to the State Board of Health. On the basis of a population of 3,500,000 people, a breakdown of the \$1,313,000 in tax money from all sources entrusted to our excellent State Board of Health for all health services allows only 37 cents per person for the year. This does not include the grant of \$1,300,000 to the eleemosynary institutions. However, only a part of this sum is spent for medical care. There are nineteen counties in the state without a whole time health department. The State Board of Health reports that in 1940 there were 22,140 new cases of venereal diseases reported. There are now 36,000 active cases

of syphilis under treatment in public health clinics in North Carolina. The incidence of syphilis in North Carolina is 40 to 50 per thousand among the whites, and 150 to 180 per thousand among the Negroes. In a recent survey of draft registrants in Harnett County there was an incidence of 218 per thousand for the Negroes. Syphilis, like tuberculosis, is a chronic disease, and the factors which favorably influence a cure are the same in both diseases—namely, rest and good food rich in vitamin and nutritional values. Most cases of syphilis are advanced when treatment begins in the clinics. The State Board of Health reports that over one half of the new cases in March were latent when treatment began. It is difficult for the clinic attendants to enforce sufficient treatment to produce a cure. The economic status of these people does not enable them to get proper food and rest along with the treatment. This contributes to the high death rate from cardiovascular disease and other diseases in the state. The prevalence of gonorrhea and syphilis unquestionably will be a factor in lowering the birth rate and increasing morbidity and mortality rates. A problem of national importance is that of protecting men coming from the New England states, where the incidence of syphilis is low (80 per 1000) to army camps in a state like ours where the incidence of syphilis is high. The venereal disease rate in any army camp is a reflection of the conditions in the communities surrounding a camp.

I call your attention to these problems and facts because they exist as fields of useful medical endeavor. I do not mean to infer that they are not being attacked, because they are, and by the best medical brains of North Carolina. Each year progress is being made. May I supply one example: The death rate from tuberculosis in North Carolina has dropped from first place to eighth. It is beyond the scope of a paper of this type to give a recital of all of our efforts and accomplishments. Suffice it to say here that the State Board of Health, which ranks high in the nation, is now sponsoring a total of 496 clinics in the state, including 20 for crippled children, and 190 for maternity and infancy care. There are many free private clinics which are doing notable work. The picture is not altogether dark, for we are becoming aware of our weaknesses, and have made progress in fighting them. For the past fifty years we have had not only more

wealth with which to carry on the fight, but a more enlightened and intelligent leadership, and an awakened public conscience.

FITNESS FOR THE NATIONAL EMERGENCY

NATHAN B. VAN ETEN, M. D.

NEW YORK

On January 20, 1941, the curtain rose on the first act of a new American drama. The President of the United States pronounced the prologue, making history as the only American to appear for the third time in this stellar role.

No actor ever addressed so large an audience. The ears of all the world were strained to catch the meaning of a message delivered from a stage setting dominated by soldiers and the grim paraphernalia of war. Whatever its portent, it was a message delivered at one of the most serious moments in our history.

There is so much to be done in organizing for peace, or for war, that every man, woman and child is stimulated to adjustment to new ways of life.

We are not the same carefree people that we were before the sixteenth of October, 1940. The inexorable hand of conscription has turned the door handle of every home, of every occupation, of every industry and of every profession. The plans of youth are dislocated; added burdens are laid upon all workers; and the placid dreams of age are troubled.

We have once more tuned our radios to foreign wave lengths and turned watchful eyes upon our domestic order. We know that acquisitive eyes are studying every move which may contribute material advantage.

We know that world civilization is sick and needs physicians who are competent to cure the hysterias of cruelty, of fear and of despair and discontent.

We are confronted by the immediate necessity for organizing our own defenses.

I presume that no one in this room believes that New York City will be attacked, and yet, careful studies made by military experts show that attacks are possible. As a consequence the departments of Police,

Fire, Health, Hospitals, Transportation, Water Supply and others have already blue-printed defensive measures which they will be ready to use if needed. Home guards of men older than draft age are already drilling to meet local emergencies.

One of the important necessities will be coordinating central agencies for directing volunteer activities, as well as guiding the cooperative work of all lay and professional people in times of crises if they come. Every group will have local assignments and there must be a centralized directing authority.

The Committee on Preparedness of the American Medical Association has been at work ten months, and the Social Security Administrator Paul McNutt is the health coordinator for the National Government.

It seems almost too obvious to repeat to so intelligent an audience that the British Navy will be our first line of defense, if it survives the world catastrophe. The second line is a straight line, drawn on the map from Saint John's, Newfoundland, where American soldiers are already stationed, to Bermuda.

Great cities on the Atlantic coast will be defended by our own Navy, but attacks from the air might make us very uncomfortable. The Transportation Department has already measured every possible accommodation in New York City subways as shelters from bombs. The Department of Health and of Hospitals have measured all of their facilities.

Since we have come to a time when every health agency must be mobilized for national defense, we must push forward with objective planning.

Organized American Medicine is one hundred and eighty-eight years old—dating from the organization of the first hospital in Philadelphia in 1752—and has always labored to protect the health of the people. Medical services inspired by medical societies have followed lines developed by local needs, such as those for handling communicable diseases, or for hospitalization.

Medical services for the general needs of the public health have been set up, as demands appeared, in one governmental agency after another, but without any long vision of the whole problem. A mass of duplicating machinery has resulted which hampers efficiency.

We have come to a place where a new set-up seems to be necessary. Just now the na-

tional emergency seems to have created conditions which will be made the excuse for jumping into hastily conceived plans.

Health conditions in training camps seem to be demanding hospital provisions which should have been a first thought instead of an afterthought. Toughening young conscripts by exposure is likely to be an expensive experiment.

The Wagner-George Hospital Bill has been reintroduced without the help of medical men in framing this new proposal. Will the Senator always look to social theorists to write his legislation for him?

Senator Capper's compulsory health insurance bill has been introduced; and other measures designed to enlist emotional support of extravagant spending need careful watching lest they destroy the American system of medical care.

May I ask you to take this matter seriously and look to the medical profession instead of to professional politicians to write the health program for America. You are justified in expecting the education and experience of the medical profession to evolve new procedures for the delivery of better medical services.

Conscription of the youth of our country for military training, conscription of industry to transform itself into an arsenal to supply military machinery, immediately raises the question of the physical fitness of Americans to meet a national emergency. Physical fitness must be ascertained and must be maintained.

The Federal Government turns with confidence to organized medicine for help in organizing the national man-power. Careful daily collection of classified information through many years concerning medical personnel is quickly available and is given with patriotic enthusiasm.

Ninety-five years of fighting for the honest application of scientific knowledge to the demands of health for all people has carried the American Medical Association to the strongest position among medical organizations.

Although its membership represents every shade of political complexion, partisanship has never dominated its patriotism. Its horizons extend far beyond election days. It will not compromise with political expediency. It will not desert the idealism that has carried it through many crises. It

is preparing for the defense of Americanism against the attacks of paganism. It is preparing for maintenance of an advanced democracy unhampered by the subversive influence of foreign autocracies. It fights for the supremacy of the American way of life.

Although every type of religionist is included in its roster, it looks to all of them for loyalty to one ideal of protection and promotion of human health. Cherishing the highest ideals of the most learned profession, it will not surrender to paganistic nihilism. It respects all religionists who are loyal to their beliefs.

Serving every social level, it sympathizes warmly with all who are physically or mentally unfortunate.

Although its membership represents the descendants of every race, its fundamental interests are American. Recognizing the cosmopolitan character of a nation built from its beginnings by refugees from persecutions and intolerances, its hospitality has been continuously generous toward the mental and religious attitudes of the more recent seekers for freedom in our country.

Although it respects the natural affection of newcomers for the traditions under which their life patterns have been formed, it believes that all should adapt themselves as soon as possible to national programs which have evolved the American way of life, and should cooperate in its growth and improvement.

Although the American Medical Association may be justified in pride of accomplishment, it is not prejudiced against any earnest approach to new solutions of administrative or scientific problems. It welcomes the restless spirit of scientific adventure, and encourages it. It has spent more than a million dollars in research in the last twenty-five years. At the same time, however, it has been inflexible in its disapproval of those who would profit from the credulity of ignorance. It has never sold out to commercialism. It believes that Americanism is worth while. It cherishes the ideals of orderly democracy. It despises the devious ways of disloyal propagandists, not only in the field of medical service, but in civic life.

The Health Program of the American Medical Association is an evolutionary development which fortunately escaped in large measure the acquisitive eye of the log rolling politician until the last few years,

when job seekers, awakening to the possibilities of expanding bureaucracies, began stimulating the superficial humanitarianisms of political leaders. As a consequence the problem of the future health of all our people is being attacked by amateurs who know nothing about the personal practice of medicine and who know about mass medicine only from superficial observation of foreign systems, none of which have improved the quality of medical care or have produced anything superior to our present system in the United States in 1941.

No one claims perfection for our system of delivery of medical care, but all of you know that the American Medical Association has been working for ninety-five years to improve it, and that its chief concern is better health for all our people. We have good reason to be proud of the fact that the science of medicine has steadily advanced the health of the American people, and that, so far, the legal establishment of any of the foreign systems has been successfully resisted.

In spite of the undisputed fact that American health statistics are unsurpassed the position of the physician in American society has become increasingly difficult, because political theorists have formed pressure groups whose object is to force legislative action to promote governmental control of medical service. The Government in medicine, like the Government in business, is just another step from democracy toward totalitarianism.

The thought of dictatorship in America is revolting. And yet, appeals to popular emotion under the aegis of patriotism, of social security, of pensions, of welfare, of relief of unemployment, or of the people's health have carried many people from confidence in their ability to take care of themselves to belief that they have no personal responsibility for providing the sources of paternalism which they expect to enjoy. They believe that they will drink forever from the inexhaustible wellsprings of government.

Dictatorships have been built on such public sentiment. If such sentiments prevail the medical profession may well expect a fate similar to that which reduced German physicians as well as the German people to economic slavery.

The physicians of the United States have made history. Campaigns against tuberculosis, diphtheria, pneumonia and syphilis

have changed the health statistics of the nation to figures that could not have been predicted twenty years ago.

We know that an intelligent medical profession can educate the people in personal and community health. We know that education has been largely responsible for lowering the mortality from tuberculosis. We know that diphtheria can be entirely eradicated if the people will have enough intelligence to listen to the advice of the doctor and immunize every child. We know that smallpox can be entirely eliminated by universal vaccination. We know that great gains have been made during campaigns against syphilis. We are confident that studies of immunology will salvage more and more people from the ravages of communicable disease.

These have been great years in the warfare of science, and because our frontiers have been so remarkably advanced, we might be justified in predicting greater triumphs, if the future of our civilization were not threatened by social upheavals, the violence of which cannot be foreseen.

We are conscious of the campaign of German sabotage which has been carried on with diplomatic immunity since 1915. We remember the efforts of the brilliant Count Von Bernsdorf to seduce the Wilson administration and the violent sabotage of Von Papen and Captain Boy-ed. The same Von Papen is now operating in Turkey. We know that the same things are going on here at this moment. We know that Russian communism and German socialism have been active here for many years.

We know that the infiltration of foreign thought has fermented discontent in this country so that some Americans have been led into disloyalty and are now working for the destruction of our democracy. We know that American generosity has been so grossly abused that world revolution is being promoted.

The European war has passed its first anniversary and a year of valuable time has been wasted in debating, so that we are just now only at the beginning of preparations for our own defense. Our medical preparedness should have begun to function immediately after our offer to the Government in September, 1939. But muddling partisan politics restrained patriotic action.

At the request of the War Department in June, 1940, the American Medical Association

is now actively helping. Questionnaires were sent to 175,000 physicians to discover how willing, how qualified and how loyal they may be. The response of more than 150,000 physicians justifies the traditional devotion of the medical profession to public service.

The Committee on Preparedness is building the skeletal fabric for effective service in every state—not only for active field service, but for service on draft boards and for protection of civilians at home. The profession will be ready when called for.

Meanwhile there must be no relaxation of educational standards in the quality of medical care for our country of the future. The future of medical service should be viewed from high points of idealism, standing upon firm, well established biological foundations. Those who wish to see the highest national health might well work for a selective draft of all our citizens to choose those who may become the parents of future Americans.

Physical fitness must be recognized as an important step toward national fitness. Fifty-two per cent of Americans are said to be physically competent for hard work. This level must be raised if our future is to be viewed with satisfaction. I believe that educators should be urged to turn their minds from sentimental to practical methods of equipping youth for the hard realities of life.

Annual examinations of the apparently healthy have long been advocated with very small results. Physical examinations of children are carefully done in few places. I warmly advocate careful annual examination of every school child and training for physical fitness throughout school life. I believe that such universal study of the school child added to promotion of health through intelligent nutrition and sanitary housing are more important elemental defenses than guns or planes or tanks.

While the common effort in our educational system seeks its objective in a thin veneer of so-called general culture, average abilities for the practicalities of life are neglected. Fear of regimentation seems to restrain school administrators and limits their vision or understanding of the destructive experiences of indulgent self-expression, which seems at this moment to be resulting in a disorderly generation.

Physical training of the physically fit and rehabilitation of the physically unfit is large-

ly the hit or miss concern of undirected individuals. Every school and college in the country should be provided with serious medical consultants, who should be educated and inspired promoters of national health. If every college for women or men would emulate the physical training now carried on at West Point for the next twenty years, we should have thousands of young people physically fit for healthy citizenship and prepared to meet emergencies at home or abroad. We should have many thousands of young people so physically fit that they would be willing to soil their white collars and their strong hands with the work of the world.

For many years we have been discussing ways and means of solving the problems of the unemployed, now claimed to be five million persons. No one seems to know how many of these are physically or morally or mentally unfit or unadjustable to possible demands for their services, but it may be safely assumed on the basis of studies of other groups that more than 30 per cent are physically unfit and many more are unskilled for work that might be offered them in more prosperous seasons.

The President of the United States has said that Americans are soft. He also said that "if we are to survive we cannot be soft in a world in which there are dangers which threaten America—dangers more deadly than were those the pioneers had to face." He also wisely said that the old pioneers "put hard fibre in the American spirit, and strong muscles in the American back."

The selective draft for the war of 1917 and 1918 revealed that from 30 to 40 per cent of those examined were unfit to fight. Have we profited from the lessons of that experience? Statistics of June, 1940, indicate that we have not. Of 2313 applicants examined for voluntary enlistment in the Regular Army, month of June, 1940, Second Corps Area, New York City 762, or 31.2 per cent, were rejected because of defects.

It is claimed that current rejections are based upon higher standards, and that those inducted represent the cream of selective service. In spite of such statements statistics of 1941 are very similar to those of the first world war.

It is obvious that many have been rejected for remediable defects. Insufficient or incompetent *teeth* lead the list. This misfortune can hardly be charged to lack of available dental service in this country. Dentists

are ready and willing and able. It must be largely charged to the ignorance and stupidity of careless people. Other remediable defects are hardly the responsibility of physicians, who are always willing to help regardless of compensation. Although there is evidence of increasing popular interest in health, there still is significant failure to penetrate the personal consciousness of a large number of our people.

We are boastful of our great schools and colleges—of our greatly increased literacy, of our vast numbers of college students. We have idealized the life of those in the learned professions. We have educated so many people to wear white collars that there are not enough people who are fit for the skilled mechanical work that we need so much at this time. We have stimulated a false pride in the attainment of college degrees, and dislocated labor by crowding some fields while others are poorly supplied. We have encouraged a complacent snobbery that looks down its nose at productive labor. We have forgotten to teach that healthy existence is built upon practical foundations, and we have paid so little attention to physical fitness that we shall have to draft 3,000,000 men for military service if we shall secure 2,000,000.

Our mental unfitness is illustrated by 500,000 hospital beds occupied by the institutionalized insane. Our social unfitness is illustrated by a half million active syphilitics and a half million migrating indigents—15 per cent of whom are said to have open tuberculosis.

In medical education most of the current writing and thinking has been in the interest of the development of specialties. Here again practicalities are forgotten. I believe a National Health Program would be promoted by the concentration of medical education upon developing good average physicians for average patients.

Hospital facilities will grow to meet the needs of all our people, and if the present interest in transportation prevails, good roads will run to every physical frontier. In the state of New York good roads have brought every citizen within thirty minutes of a physician.

Statistically, the health of the American people measures up to higher standards than are found in any other large nation, but these figures do not satisfy a medical profession which aims still higher.

In advocating a new health program I believe that a National Health Department with a Secretary of Health in the Cabinet is as important as a War Department with a Secretary of War. Defense against disease is as important as defense against a military enemy. Defense of the nation's health is vital to all other defensive forces, but any defensive program will fail to reach its objective unless it is supported by a vigorous offensive which will arouse the public conscience.

Health means so little to most people until it fails or is lost that the first emphasis is on curative therapy; the second on prevention, which attracts minor attention except when given to the prevention of the communicable diseases of children; and last and very little emphasis on the promotion of physical fitness through good nutrition, good housing and physical training.

I believe in eliminating the present confusions and duplications of Washington bureaus by centralizing national health functions. This now seems functionally possible under the leadership of the Social Security Administrator, the Honorable Paul McNutt.

I believe in decentralizing the care of the sick individual by originating his care in the smallest political subdivision, such as a school district, where his real condition is known, and then carrying his necessary call for help to the township, to the county, to the state, in that order—but to the National Government as infrequently as possible.

Our National Government can coordinate nation-wide programs, and our local governments can carry them to successful accomplishment.

The future of our national health is intimately involved in the evolution of our national intelligence. Democracy is Government from within the people themselves. Dictatorship involves the surrender of the people's mind.

There are people who say that American democracy is merely tolerance of unlimited experimentation, with no definite national objective upon which loyal thought can be concentrated. Such an ideal is greatly needed. Call it American Spirit, if you think it so intangible; call it love of home and country; call it love of liberty—whatever it is called it must be so strong that it will irresistibly carry the Stars and Stripes to supreme leadership.

POTASSIUM SULFOCYANATE IN THE TREATMENT OF HYPERTENSION

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In our cardiovascular investigations we have worked on the assumption that there is in the human body a sensitive balance of control of the level of blood pressure. The details of this control are not known. There are many theories, with apparently good support for some of them. Essentially, there is some agreement that there are two substances in the blood, both of which are required to produce a third substance which keeps the tone of the musculature of the arterioles in an active or reactive state, thereby at least helping to control blood pressure and maintaining a normal or abnormal pressure, the level of the pressure depending on the balance between these substances and a depressor substance.

Since high blood pressure is more frequently encountered than low pressure, it appears that nature has provided the stronger arm of the balance for boosting the pressure—that is, that the vasoconstrictor control is stronger than the vasodilator.

While a pressure of 120 systolic, 80 diastolic is accepted as a good average normal pressure, upper and lower limits of normal pressure are ill defined. Sudden, severe rises in pressure are quite rare. After an individual maintains a pressure of 120 systolic, 80 diastolic for many years a pathological rise in pressure will be likely to be gradual rather than sudden. At some point in the gradual rise it should be possible to assume that the pressure is becoming abnormal and to institute remedial treatment without waiting for an extremely high pressure to develop. If a pressure that tends to rise can be returned to normal in the early stages, there is a strong possibility of preventing anatomicopathological changes; when such changes progress sufficiently far, they are irreversible. With no attempt at being arbi-

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trary, we have looked at all systolic pressures of 130 and diastolic pressures of 90 or above as being open to suspicion; in younger patients we feel that such pressures should ordinarily be considered pathological and an effort made to lower them slightly, if possible, and at least to prevent a further rise. In older people who have become accustomed to a higher pressure, caution must be observed in lowering pressures from any level.

Any studies of blood pressure are handicapped by the failure of patients to seek aid for hypertension until the pressure is pathologically high and attended by vascular changes that make complete recovery difficult or impossible.

We do not like to use the term hypertension as a diagnosis. It is a symptom of disease, and probably rarely, if ever, a disease entity. It may be compared with fever in this respect. It was not so long before our era in medicine that fever was accepted as a diagnosis. Gradually, various causes of fever have been recognized and classified, and fever is no longer the diagnosis, but one of the symptoms of the disease.

There are other factors involved in the control of blood pressure. A normal person with normal blood pressure is not likely to show much variation in the blood pressure level, regardless of extrinsic factors such as emotional upsets. While we have no adequate explanation for the effect of emotions on blood pressure, it might be explained by some influence the adrenal cortex exerts over some of the factors controlling blood pressure. Persons with hypertension usually show other effects of the abnormal physiology responsible for the high pressure. Such patients are often allergic. They are apt to be taut and unable to relax; there is a generalized increased tension that is not limited to the arteriolar musculature.

Depressor Substances

We have studied many substances that might exert depressor effects on the blood pressure. Tissue extracts in general produce foreign protein effects that lower blood pressure. This may be due in part to the effect of potassium sulfocyanate normally present in such tissue extracts. Liver extracts have been used widely for the reduction of blood pressure, but their use has been almost entirely abandoned. Renal extracts are now in favor in some clinics and are meeting with some degree of success⁽¹⁾.

Nitrites and nitrates are present in the blood stream in minute quantities, and have been used for the reduction of blood pressure. However, the action is so fleeting that this form of treatment is not practicable. Nitrites tend to produce headaches if any substantial reduction in pressure is effected. In the blood stream these substances are so unstable that accurate quantitative determinations are difficult. This fact, together with the scarcity of these substances in the blood stream, tends to discredit any practical significance that might be attached to their presence in the blood stream.

Many substances have been exploited for the relief of hypertension, but when used according to our methods of eliminating the results of psychic influences, none of these substances have proved to be potent.

Sulfocyanates

The only anti-pressor substance that is present in the blood in readily demonstrable amounts is the sulfocyanate radical, apparently usually combined with potassium, though possibly also combined with calcium, sodium or magnesium. It is normally present in the fasting blood plasma in amounts varying from .4 to 2.8 mg. per 100 cc. of blood⁽²⁾.

Hydrocyanic acid is one of the end products of protein metabolism. This is a powerful depressant in any part of the body. On smooth muscle, it produces an immediate paralysis in very low concentrations. However, as hydrocyanic acid is formed in the body, it immediately unites with sulfur, producing a non-toxic compound. This sulfocyanate radical then unites with potassium (or some other mineral), in which form it is active as a depressant to smooth muscle.

In the past, pharmacologists considered sulfocyanates to be inert. Later, Sollmann⁽³⁾ classified these substances with the iodides as to action in neuroses, in arteriosclerosis and in syphilis.

Apparently, sulfocyanates are formed in the body wherever protein metabolism takes place. This suggests the formation in

- (a) Corcoran and Page: Arterial Hypertension, J.A.M.A. 116:690 (February 22) 1941.
(b) Page et al.: Reduction of Arterial Blood Pressure of Hypertensive Patients and Animals with Extracts of Kidneys, J. Exper. Med. 73:7 (January 1) 1941.
(c) Munoz, Braun-Mendez, Fasciolo, and Leloir: The Mechanism of Renal Hypertension, Am. J. M. Sc. 209: 608 (November) 1940.
- Caviness and Bell: Unpublished data.
- (a) Sollmann: Manual of Pharmacology, ed. 3, Philadelphia, W. B. Saunders Co., p. 909.
(b) Pauli: Sulphocyanides, Muenchen med. Wehnschr., no. 4, 1903.

muscles, but the largest part is formed in the liver and eliminated in the bile, from which it is absorbed into the blood stream along the intestinal tract. Bile contains approximately ten times as much sulfocyanate as other tissues or fluids. Appreciable amounts are found in the saliva, urine, sweat and feces.

Sulfocyanates have been used by few clinicians. There are two reasons for this:

First: There have been reports of unfavorable results, probably from too rapid reduction of the pressure because of excessive dosage and from failure to follow the blood concentration of sulfocyanates.

Second: The principal use of this group of drugs has been in preparing patients for sympathectomies. In these cases, after the operation, the sulfocyanates have usually been discontinued and the diastolic pressure has risen to its former level or higher. This, of itself, prevented any actual benefit to the patient other than some improvement in the sense of well being. The high diastolic pressure tends to produce a so called malignant hypertension and an early death. The patients who took sulfocyanates and had the operations, if they survived the operations, died about as soon as if they had received no treatment.

The Council on Therapy of the American Medical Association in 1929 condemned the use of sulfocyanates; again in an editorial in 1940 the warning against them was repeated⁴. These warnings were entirely justified, and are still needed unless careful checks are kept on the blood level of sulfocyanates.

Evaluation of Vasodilators

In our work during the past few years we have attempted to evaluate each drug used on its own individual merits. We recognize that it is easy to produce a temporary reduction in pressure. The attitude and methods of the physician can raise or lower the pressure. A patient seen recently had been treated by another physician whose statements and manner had raised his systolic pressure from 200 to 260. Reassurance and sedatives lowered the pressure to 180. In our treatments we attempt to set the mind of the patient at ease by explaining to him that the high pressure is not a disease but is a symptom of disease, and that we are

sure we shall be able to help him, as we have helped other similar patients.

We also use small doses of sedatives. We have secured better results with small doses of phenobarbital given in the morning than with any other. If the patient can be helped in the morning by calming his hyperactive mental state, he will rest better at night than if only a night dose is given.

There does not appear to be much need to alter the diet materially. Many of our patients have limited selection of foods as well as limited amounts of food. If we ordered special diets for them they might worry so much over their inability to get the ordered diet that the good effects, if any, of the special diet would be lost. We do attempt to limit hog meat, fried foods, salt and other seasonings, and to limit the total amount of the diet to the minimum requirements of the individual patient. Overeating appears to cause more trouble than the types of food eaten.

Individual Treatment

After making a careful study of each case to determine the need and desirability of this type of treatment, we have a talk with the patient and attempt to set his mind at rest regarding his condition. Urinalyses and complete blood counts are made, and when possible studies are made for blood retention of metabolites. Small doses of sedatives are given and the blood pressure is checked later to determine the response secured. Usually a week or two later, when it is determined that no further improvement is to be expected from this preliminary treatment, we give the sulfocyanates if needed. It is not to be inferred that sulfocyanates are required in all cases of hypertension. Relief of anxiety neuroses often lowers pressures to normal. Gastric upsets are at times associated with a moderate rise in pressure which is relieved by correcting the digestive disturbance. Various allergic manifestations are associated with elevated blood pressure, but a return to normal pressure may be seen with relief of the allergic reactions. Any method of treating hypertension, if associated with relief of the underlying causes, might be credited with cure of hypertension. From many published reports, it appears that undue claims for various so-called cures of high blood pressure have been made on this basis. The methods we follow tend to eliminate psychic effects of the treatment,

4. Editorial, J.A.M.A. 114:2391 (June 15) 1940.

and we have attempted to ferret out any cause of hypertension and relieve it before giving potassium sulfocyanate.

We do not use this treatment in all cases of hypertension. We consider cardiac decompensation a contraindication. In such cases, the heart is apparently unable to keep the systolic pressure at a level sufficiently above the diastolic pressure to furnish an adequate volume of circulating blood. We have avoided the use of sulfocyanates in all types of acute inflammation and especially in acute nephritis and in severe renal insufficiency. We have declined to use this treatment in cases in which we could not secure adequate cooperation. We do not consider it safe to use these drugs without making quantitative blood determinations of the sulfocyanate at sufficiently frequent intervals. There is at times a cumulative action which is attended with some danger and which may be associated with inability of the kidneys to eliminate potassium sulfocyanate.

Technique of Blood Determinations

In our determinations of the blood potassium sulfocyanate content, we precipitate the protein with 10 per cent trichloroacetic acid solution and filter it. To the filtrate we add ferric nitrate to form red ferric sulfocyanate. Colorimetric comparisons are made with standard solutions of known strength. This method is reasonably accurate for practical purposes. However, for part of our work, especially in determinations of the normal content of blood, we use a special photo-electric colorimetric method.

Dosage

Five grains of potassium sulfocyanate daily after breakfast is used as the initial dose. This dose is continued with the slightly limited diet and sedative for several weeks. During this time, blood determinations of the concentration of potassium sulfocyanate are made weekly, and more often if it appears to be indicated. In almost all cases there is a fall in systolic and diastolic pressures. In cases presenting a low pulse pressure at the beginning of sulfocyanate treatment, a greater drop is to be expected in diastolic pressure than in systolic pressure until the normal ratio has been established. As the very high diastolic pressure falls, giving the myocardium more rest, systolic pressure may rise, thus helping to restore a

normal systolic diastolic ratio and thereby giving a normal pulse pressure.

In some cases, as the blood pressure drops, it may be necessary to decrease the dose. This appears to be preferable to stopping the drug. Many patients will show a return to normal blood pressure after a few weeks' treatment, during which the blood potassium sulfocyanate concentration was maintained very little if any above the normal level for patients not on treatment.

Some patients may require an increase in the dose. We do not increase the dose until the pressure has stabilized itself at the lower level effected by the initial dose of sulfocyanate. There are several reasons for this conclusion:

First, it does not appear to be advisable to reduce the pressure too rapidly; too rapid reduction tends to produce headaches.

Second, we do not think it advisable to make any drastic reductions in pressure; were the systolic pressure to drop too near the usual diastolic pressure level, there might not be an adequate circulation of blood. When this occurs in nitrite therapy, the diastolic pressure remains high, and uremia or cardiac failure may result. However, in our potassium sulfocyanate work, no such results have been encountered.

Third, there is a cumulative action by this group of drugs; several days or weeks are required to secure full effects of any dosage, and increasing the dose before its full effect has been secured would produce a more rapid drop in pressure than would be anticipated.

The dose is decreased or increased as indicated throughout the treatment. We attempt to produce slow and gradual changes in the level of the blood pressure to allow the musculature of the arterioles to adjust itself to changing blood volume flow. We feel that the essential factor in our method of treatment is the reduction of diastolic pressure in the proper ratio to the reduction of systolic pressure. It is only by the reduction of diastolic pressure that it is possible to reduce the load of the heart laboring to maintain a pressure high enough to give an adequate volume circulation above a high and unyielding diastolic pressure. Every beat of the heart must raise its internal pressure above the level of the diastolic pressure before the aortic valves can open; then the pressure must continue to rise in the heart until the pressure is high enough to produce an adequate pulse pressure.

There is very little rest for the heart in such cases. In an effort to produce an adequate volume flow of blood, the heart rate increases, and the rest period decreases proportionately.

We attempt to treat our patients with as low a blood potassium sulfocyanate level as possible, and we often secure satisfactory results with relatively little increase in the blood level of potassium sulfocyanate. Only rarely is it necessary to raise the blood potassium sulfocyanate above 9 mg. per 100 cc. of blood. We have seen much higher levels, with no serious ill effects.

We are impressed by the rapid relief of symptoms, such as headaches, weakness, and dizziness, and the feeling of well being associated with the treatment. This improvement is often quite rapid and may be independent of blood pressure response. One patient who had frequent vascular crises with a sharp rise in pressure, and shock with angina pectoris has had complete relief and has worked regularly for more than two years. Now his blood pressure ranges about 160 systolic, 90 diastolic, whereas it was 220 systolic and 130 or 140 diastolic, with a rise in his crises to 280 systolic, 160 diastolic. He has had no vascular crises or angina since the treatment was commenced.

Results

We recognize that we do not have the cure for hypertension; yet we do have a method which in our hands produces very satisfactory reductions in pressure, both systolic and diastolic, stabilizes the pressure at a safe level, apparently frees the patients from the danger of vascular crises, apoplexy and cardiac failure, and with reasonable care minimizes the danger of the occurrences of

attacks of angina pectoris, the angina of effort. We still admit ignorance of the nature of the active pressor substance in the blood⁽⁵⁾.

Approximately 120 cases have been treated by us with potassium sulfocyanate. Several of them stopped treatment, and only those patients who have been followed for several months have been included in the figures in this report. There has been no other selection of the cases included in this report. Results have been classified as good if there has been a sustained reduction of 15 per cent or more in both the systolic and diastolic pressures. Very few showed so small an improvement. Many of the patients now show a normal pressure.

Causes of Poor Results

Of the 17 cases showing poor results, one was a toxemia of pregnancy; this patient could scarcely have been expected to show any improvement from this treatment. Three patients with syphilis of the central nervous system were treated; results in all were poor. Nine other old syphilitics were treated and six of them gave poor results; results in the other three cases were fair. Two patients had had hemiplegia. One patient who had a mild decompensation also gave poor results. All the other patients whose results were poor presented severe grades of arteriosclerosis. There is no reason to expect good results in such patients from any method of treatment. These cases illustrate all the contraindications to the use of this treatment which we have encountered.

Neither age, sex, race nor social status appears to influence the results. The fact

5. Caviness, Verne S.: Arterial Hypertension, Tr. M. Soc. State of North Carolina, 1926, p. 271.

RESULTS WITH POTASSIUM SULFOCYANATE

No. Cases	Age Group	Race		Sex		Results			Diagnosis			Classification of Patients*
		W	C	M	F	Good	Fair	Poor	Ess. Hyp.	Hyp. with Lues	Hyp. with Decomp.	
15	20 - 40	7	8	8	7	9	1	5	13	2	0	A— 1 C— 7 B— 6 D— 1
45	40 - 60	31	14	28	17	33	4	8	39	3	3	A— 8 C—14 B— 9 D—14
27	60 - 80	23	4	21	6	18	5	4	23	4	0	A—10 C— 5 B— 5 D— 7
Total: 87		61	26	57	30	60	10	17	75	9	3	

* A—N. C. State Hospital. B—N. C. State Prison. C—Rex Hospital Clinic. D—Private Patients.

Classification of Results:

Good: 68.9%. Above 15% reduction in systolic and diastolic pressure.
 Fair: 11.5%. Above 10% reduction in systolic and diastolic pressure.
 Poor: 19.6%. Below 10% reduction in systolic and diastolic pressure.

that only two private patients had poor results can be explained by the fact that the private patients were in better physical condition and did not show toxemias of pregnancy, hemiplegia, syphilis, or too severe grades of arteriosclerosis.

One patient, not included in the table, was in the hospital two weeks on the service. She gave a very satisfactory response to the drug, but rather suddenly her blood potassium sulfocyanate level rose to a concentration of 35 mg. per 100 cc. of blood. The drug was stopped, but the concentration increased for several days. There were no ill effects except a skin rash and severe pains in her legs and back. Her blood pressure dropped to normal and remained normal while she was in the hospital, but we have not seen her since her discharge from the hospital. Care is needed to prevent too high a concentration in the blood.

This method of treatment is simple, but far from being free from danger. Apparently there is a definite danger if the blood concentration becomes too high. However, the most effective blood concentration appears to be far below the danger zone, and is often near the usual normal level of patients not on treatment.

We have not encountered the severe anemias from this method of treatment that have been reported by some of the earlier observers. There may be two reasons for this:

First, we use smaller doses, with a more gradual lowering of the blood pressure, and work with a lower blood concentration of potassium sulfocyanate.

Second, the anemia usually associated with severe hypertension may not at times have been differentiated from an anemia that might have been due to drug therapy.

Our patients are much more comfortable under treatment and are able to work. Only very rarely do we stop them from work. When they stop treatment for any reason, we note a gradual rise in diastolic pressure, followed later by a rise in systolic pressure.

Conclusions

1. Potassium sulfocyanate is a safe vasodilator substance if used properly.
2. Potassium sulfocyanate lowers the systolic pressure, and also lowers the diastolic pressure in the proper ratio.
3. Potassium sulfocyanate can be made to

lower blood pressure gradually without the usual headaches associated with reduction by other means.

4. Potassium sulfocyanate in conservative doses apparently does not produce anemia. Anemia is usually associated with any severe hypertension, whether untreated or treated by any means.
5. Potassium sulfocyanate is present in the blood stream in a much larger percentage than any other known antipressor substance; it appears to be the natural agency with which to offset the effects of pressor substances.
6. The drug exerts a cumulative action at times.
7. There appears to be no tendency towards the development of a tolerance to the use of the drug. Numbers of patients have taken it several years without any loss in its effectiveness.

THE FRONTAL LOBES

In Their Relationship to the Ego and the Future

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and

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From earliest times the frontal lobes have been considered as portions of the brain concerned with the personality. The ancient Greeks endowed their gods and heroes with broad expansive brows, denoting superhuman traits. A multitude of scientific studies on the functions of the brain since the time of Gall and Spurgheim have spoken of the frontal lobes as being concerned with the highest psychic functions. Social sense (Bianchi); instigator of progress (Tilney); constructive imagination (Franz); synthesis (Brickner); changing categorical attitudes (Goldstein); planned initiative (Penfield)—these and a number of other functions have been assigned to this part of the brain by authors who have undertaken the study of patients whose frontal lobes have been damaged in one way or another.

There are several inherent defects in the material of these authors, invalidating its use to our entire satisfaction. Tumors of the frontal lobe compress and infiltrate the

From the Department of Neurology, George Washington University. Presented before the North Carolina Neuropsychiatric Association, Durham, March 28, 1941.

brain, and they interfere with its function also by disturbing sight or speech; injuries are seldom sharply localized, and even when the injury consists in the extirpation of one or the other frontal lobe, there is always a surgical reason for that extirpation, and damage is certain to extend beyond the confines of the extirpated portion. Atrophies and inflammations are widespread, and thromboses and abscesses are seldom symmetrical. Finally, in the case of the frontal lobes, since both sides appear to work as a unit, one of them can be severely damaged without disturbing personality to any pronounced degree. The second major defect in the studies on the frontal lobes thus far reported is the lack of information concerning the personality before the onset of the disorder that required surgery. As a result of all this, even in the most exact studies, the problem solved has been the functioning of the personality deprived of a certain amount of frontal lobe tissue, rather than the function of the frontal lobes.

The operation of prefrontal lobotomy has brought with it some new concepts of the functions of the frontal lobes. During the past four and a half years we have had the opportunity of studying more than 80 patients before and after incisions into their frontal lobes. The operations were performed for the purpose of freeing them from severe anxieties, depressions, hypochondriases; from crying spells and from suicidal ideas; from worry, obsessive thinking, apprehension and agitation. When the operations succeeded these symptoms disappeared and were replaced by good humored acceptance of the facts of daily existence, and a renewal of interest in external events as opposed to internal. When we have gone too far, cut off too much of the frontal lobes, we have seen a state which is described as typical for frontal tumors—namely indolence, inertia, euphoria, tactlessness, irascibility and indecency.

One thing is certain: there is no significant intellectual deficit following prefrontal lobotomy. If performance falls below the standard expected of the individual it is because of certain emotional alterations that affect his attitude toward himself and his drive toward perfection.

Prefrontal Lobotomy

Prefrontal lobotomy consists in the surgical incision of the white matter of the frontal

lobes. In our experience the best results are obtained by keeping the incision in the plane of the coronal suture. This incision passes close to the knee of the corpus callosum and the anterior horns of the lateral ventricles, and cuts across two important projection pathways in the frontal lobes, the fasciculus cinguli (not always injured) and the anterior thalamic radiation. The association pathways are also affected, particularly those crossing in the corpus callosum, but we believe that they are less important.

When the operation is performed under local anesthesia, as is the case in the majority of instances, the behavior of the patient can be observed as first one and then the other frontal pole is separated from the rest of the brain. The most striking feature is the immediate reduction in anxiety. While the preliminary steps of the operation are being carried out the patient is not infrequently in a panicky state and totally unable to carry on a conversation. In a recent case the pulse and blood pressure rose to 160 and 162 systolic, 110 diastolic respectively while the burr holes were being placed. The patient kept repeating over and over: "I want to live; I want to live." The hands were cold and white, almost dripping moisture, and she was totally inaccessible. With the performance of the final incision in the frontal lobes all the tension disappeared, the blood pressure returned rapidly to its previous level of 110 systolic, 74 diastolic, the pulse fell to 90, and she was able to respond to questions.

Not infrequently disorientation and somnolence set in for a few days after operation, and sometimes vomiting and incontinence. Unless these appear, we believe that the operation has been insufficiently extensive and are inclined to reoperate. Patients are usually able to be up and about after five days, and are discharged in ten days. During the postoperative period the patient shows a very pronounced alteration in his attitude. He is calm and placid, and although he may insist that the fears and pains are still present, he admits that they don't worry him. He may go through the motions of a compulsive act, but more from habit than from necessity. He discusses his hallucinations or delusions as if they were unimportant, just his imaginings. What apparently takes place immediately after operation is bleaching of the affective response,

followed by disappearance of the morbid ideas, and finally subsidence of the compulsions.

Personality Changes

The outstanding alteration in personality appearing as the result of prefrontal lobotomy is the redirection of its interests. Introversion changes to extraversion. Emotional responses are lively but are apt to be shallow. Although these patients laugh more easily or flare up in anger, there is none of the brooding intensity previously observed. There is a notable lack of consciousness of the self, both as a member of society, and as a collection of organs. There is a certain indolence, or procrastination, or laziness that is in marked contrast to the passionate industry that preceded the onset of the neurosis or psychosis. Above all there is a certain lack of foresight, not so much with regard to external things having to do with the occupation of the patient, as with regard to the realization of how the patient will appear in the event of a certain action taken by him. There is the basis of the tactlessness, the silly jesting, *Witzelsucht* and general light hearted childishness seen in some cases.

It must not be supposed that patients undergoing prefrontal lobotomy are reduced in their capacity to think constructively. Quite a number of them have returned to their previous occupations at a satisfactory level of efficiency, whereas few of them require institutional care. Patients need a period of adjustment following operation before they are able to return to work. This may vary from a few weeks to many months depending both upon the type of work and the type of patient. Naturally indolent individuals who have driven themselves to capacity in search of the ideal will be content with something less than that and will have to be pushed. Naturally vigorous people, on the other hand, may show a lack of the sense of fatigue and may continue working beyond their previous capacity. Naturally retiring people are inclined to accept what is handed them, while naturally aggressive people sometimes seem to lose the power of restraint and become disagreeable problems for their families. The operation works best in those individuals of natural industry and capability whose ideas have become directed inward with feelings of guilt, uncertainty, insecurity, incapacity, fear and anxiety.

The Frontal Lobes

From a study of patients undergoing prefrontal lobotomy we have come to the belief that the frontal lobes are concerned with foresight and with consciousness of the self, and that the affective toning of these ideas is mediated through the anterior thalamic peduncle or fronto-thalamic radiation which is cut by the operation. The absence of any significant intellectual defect inclines us to place the mechanism underlying memory and intelligence in the large association areas of the parietal, temporal and occipital lobes. In other words, what lies behind us in this existence, lies behind the rolandic fissure in our brain, whereas what lies ahead is worked out in the great frontal association areas. By means of these we are able to foresee the results of various lines of action and to appreciate in advance, to seek the fruitful and avoid the harmful, to follow the devious course that will bring the best results attainable, and to compare the actual accomplishment with that which we have foreseen. Furthermore, by means of the frontal lobes we are able to act and to observe at the same time, to be both the actor and the audience. We are aware of our bodily mechanisms in the sense of anticipating what may happen if a certain sensation continues, and what it may mean in terms of disease and disability. It can readily be imagined how much affective tone is supplied to these particular ideational processes, and what may happen when the sphere of interest becomes more and more restricted to the individual himself.

Psychosurgery

When the sphere of interest is narrowed to the self to the extent of obliviousness to the external world; when the emotional charge is such that depression is invincible and suicide seems the only way out; when the illness is but an exaggeration of the patient's normal personality, characterized by attempts to see too far into the future and to envisage all the contingencies; and when the outlook for recovery under milder measures is unpromising—then the surgical operation of prefrontal lobotomy, by reducing the emotional component connected with the ideational processes, may suffice to reorient the individual in his relation to himself and to his environment. This is the aim of psychosurgery.

PANCREATIC LITHIASIS

With Report of a Case

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and

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It is the purpose of this paper to add another case of pancreatic calculi to the number already reported, and to emphasize certain unusual aspects of the case. Pancreatic calculi are rare, and most of them are discovered at the autopsy table. Wood-yatt⁽¹⁾ says that as early as 1788 Cawley reported stone and atrophy of the pancreas in a case of diabetes, and that the repeated finding of morphological changes was one of the clues that led to the ultimate establishment of the relation of the pancreas to diabetes. In fact, it would seem from the study of the literature on this subject that, despite the rareness of this condition, the study of it has contributed materially to the progress that has been made in the knowledge of diabetes and in its treatment.

Case Report

E. B. D., a white male, aged 38, was admitted to Watts Hospital for the first time on March 7, 1933. The history of his illness stated that nine years prior to this, he developed typical symptoms of diabetes: excessive thirst, polyuria, and excessive appetite. The physical examination at that time was not remarkable except for a blood pressure of 180 systolic, 100 diastolic, some pyorrhea, and diseased tonsils. The Wassermann and Kahn tests were negative. Fasting blood sugar at that time was 285.7 mg. per 100 cc. of blood, and the urine showed sugar and a light cloud of albumin. He was put on insulin, and was discharged with only a trace of sugar in the urine.

He was in and out of the hospital from then until the time of his death. In the records of these admissions, the most striking thing is the variation in the blood sugar. It ranged from 45 to 444.4 mg. per 100 cc. of blood. He was admitted several times in insulin shock.

On his fourth admission the roentgenologist, in a report of the gastro-intestinal

series, stated that there was a suggestion of a lesion at the circle of the duodenum—probably a cyst. Cardiac and renal symptoms were manifest throughout all admissions.

His seventh and final admission to the hospital was on August 11, 1937. He came in with a chief complaint of nausea and vomiting for the past week. His only other symptom was that of weakness. Physical examination revealed the following findings: The blood pressure was 200 systolic, 120 diastolic. Breathing was labored. The pupils reacted sluggishly to light; the nose showed slight obstruction. There was marked pulsation of the vessels in the neck. *Mouth:* Many teeth had been removed, and those remaining were questionable; the tonsils were diseased. *Chest:* The persussion note was normal throughout; the diaphragms moved normally; the lungs were clear, and no rales or frictions were heard. The heart rate was regular, 68; the second sound at the aortic area was accentuated; sounds were distant at the apex; no distinct murmurs were heard; cardiac dullness was increased to the left. The *abdomen* was full, with some tenderness over the lower right abdomen; there was a McBurney appendectomy scar; no hernias were noted; there were palpable glands in both groins.

Patellar reflexes were normal. No edema was noted at this time. Eye grounds showed extensive retinitis, a few small hemorrhages, and a rather large hemorrhage just above the left disc; rather advanced optic atrophy was noted.

On August 18 the patient complained of mild headache, and it was noted that he was drowsy. The patient's condition gradually grew worse, and on August 28, a pericardial friction rub was noted. On August 29 he had a convulsion and died.

His blood urea nitrogen on August 17 was 45 mg., blood urea, 96.3 mg. On August 28 the blood urea nitrogen was 46.8 mg., the blood urea, 100.0 mg. The urine showed many pus cells on this admission, and the blood sugar ranged from 51.2 to 444.4 mg.

The following is a report of the pathological findings:

Gross Findings: This is the body of a thin, poorly nourished, white male, about 40 years of age, showing much pitting edema of the lower extremities.

Chest: There is no pleural fluid. There is

Photomicrographs shown in this report were made at the Army Medical Museum, Washington, D. C.

1. Woodvatt, R. T., in Cecil: Textbook of Medicine, ed. 4, Philadelphia, W. B. Saunders Company, 1938, p. 623.

only a scattered old pleural adhesion present. The lungs are generally crepitant, and a little redder than usual. No solid areas are present.

Heart: The pericardial sac contains about 50 cc. of slightly cloudy, straw-colored fluid. The pericardial surfaces are coated by a thin layer of pale, yellow, fragile, shaggy material. The heart is of normal size. The valves and endocardium are grossly normal.

The abdominal aorta and its large branches show numerous atheromata on their intimal surfaces.

Abdomen: All organs are in their normal positions. The peritoneum is smooth and glistening.

The liver is normal in shape, but is moderately enlarged, with a smooth surface. The cut surface is studded with small, pale, yellowish areas.

The gallbladder is grossly normal. It contains about 30 cc. of thin bile, which can be expressed into the duodenum with moderate pressure.

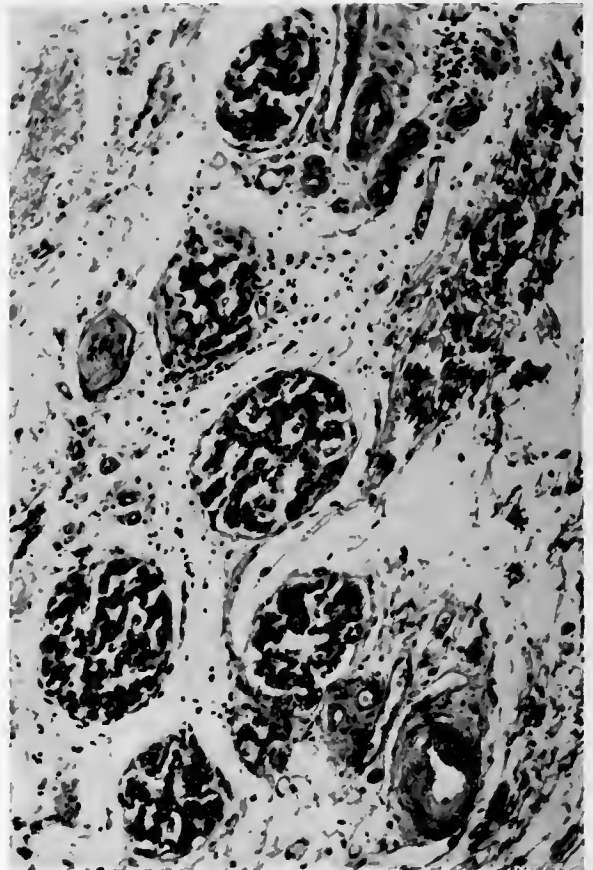
Pancreas: It is almost impossible to identify this organ, except that the pancreatic duct is filled with a hard greyish-white concretion. This concretion extends toward the body and tail of the pancreas, with branches extending into the smaller pancreatic ducts. The stone is of a "stag-horn" type with most of the branching being present in the head of the pancreas. Surrounding the ducts, there is none of the usual pancreatic tissue. Instead, it consists of fatty tissue, streaked with small bands of tough, white tissue.

The spleen is of normal size and shape. Its substance is friable and of a deep, reddish-purple color.

Kidneys: These are quite small, being not over two-thirds of their normal size. The capsule strips with some difficulty, leaving a coarsely and finely granular surface. The cortex is thin and not sharply demarcated from the medulla. The pelves and ureters are normal.

Gastro-Intestinal Tract: This system shows no striking features, other than a little swelling and some redness of the mucosa in the small intestines. There are no ulcerations.

Microscopic Examination. Pancreas: Sections from various parts show complete absence of the acinous tissue. The islets are present and are surrounded by fatty and fibrous tissue, containing round cells and

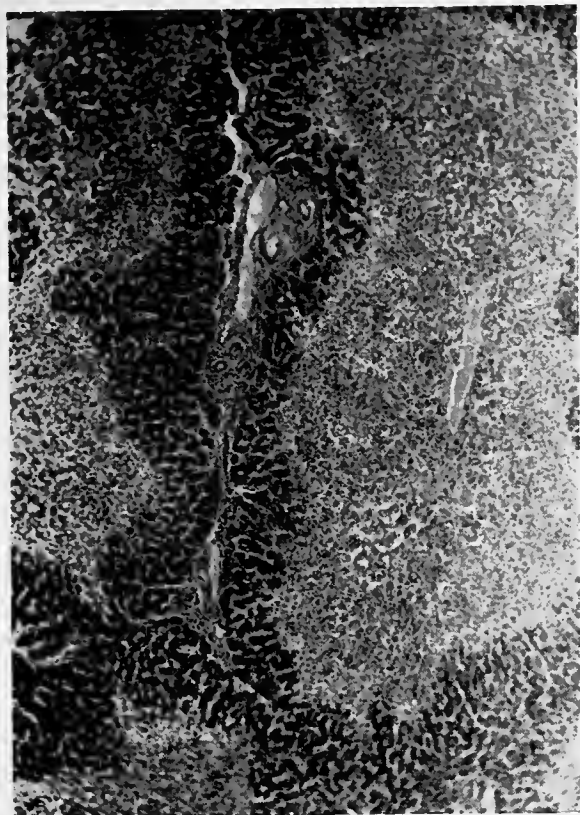


Section of the pancreas showing well-preserved islands of Langerhans in stroma of fibrous and fatty tissue, infiltrated with a few round cells and monocytes. There is complete absence of acinous tissue. Magnified 240 times.

monocytes. They show no striking features when stained with hematoxylin and eosin, and some are fairly large. The arteries and arterioles have small lumina with greatly thickened walls. In the arterioles, the walls have very scanty cells.

Kidneys: There is much fibrous tissue present throughout the cortex, which is heavily infiltrated with round cells and a few neutrophilic polymorphonuclear leukocytes. The enclosed renal elements are atrophied. The glomeruli show marked changes, which vary from fibrosis of their capsules to complete hyalinization of their tufts. Some of the better preserved glomeruli and tubules are considerably enlarged, and some of the tubules contain collections of polymorphonuclear leukocytes. The arteries and arterioles show considerable sclerosis.

Liver: The central parts of practically all of the liver lobules show large necrotic areas with only narrow zones of living hepatic cells about their peripheries.



Section of liver showing extensive central necrosis of the lobules and a very narrow peripheral zone of living hepatic cells. Magnified 90 times.

The gallbladder shows no striking features, other than some autolysis of the mucosa.

Heart: The pericardium is covered by a layer of fibrin in which are very few leukocytes. The tissue just beneath this contains a few round cells. The muscle fibers show a little granularity of their cytoplasm.

Spleen: Arteries and arterioles show moderate sclerosis.

Lungs: These show evidences of mild passive congestion, and some anthracosis.

Stones: On chemical analysis, the stones were found to be composed of calcium carbonate.

Pathological Interpretation: Chronic nephritis, arteriosclerotic. Pancreatic calculi with atrophy of pancreas. Fibrinous pericarditis (uremic). Central necrosis of liver.

Discussion

There has been no effort to make an exhaustive review of the literature.

Cases of pancreatic calculi are rare.

Seeger⁽²⁾ in 1928 collected 103 cases of pancreatic calculi and added one of his own. J. G. Mayo⁽³⁾ in 1936 stated that approximately 125 cases of pancreatic lithiasis had been reported in the literature. Brook⁽⁴⁾, reporting in the *Lancet* of October 1939, states that less than 140 cases have been reported since the condition was first described by de Graaf two hundred and seventy years ago. He stated that the diagnosis was notoriously difficult. Mayo reviewed the cases that had been found in the Mayo Clinic and found that they totaled 25.

Brook gives the following reasons for the difficulty in diagnosis: (1) There are no pathognomonic symptoms or signs of pancreatic stones, except their discovery in the stools. (2) The symptoms of pancreatitis, though this disease is apparently common, are so vague that it is seldom diagnosed. The only characteristic features are evidences of pancreatic insufficiency in fluid withdrawn from the duodenum, and the finding of undigested fat and muscle fiber in the stools. The stools are often bulky, grumous, and foul-smelling. Pain, the most common symptom of pancreatitis, with or without calculus, is likely to be confused with that of gastric or duodenal ulcer, gallstones, or renal calculi. Its situation may be epigastric, umbilical, right or left hypochondriac, or lumbar, radiating in different directions. Diabetes is frequently associated with this condition, due to the destruction of parenchyma and islands of Langerhans through repeated attacks of pancreatitis. When diabetes is caused by a lesion of the pancreas, the lesion always involves the islets; conversely, whenever the organ is diseased and diabetes is absent, the islets are relatively free from involvement. Changes in the stool, when found, are important, and are of aid in the diagnosis. Jaundice, loss of weight, nausea and vomiting are common symptoms.

According to Brook, Mayo Robeson in 1904 recognized the value of radiography in the diagnosis of pancreatic stones, because of their high calcium content. Mayo, on the other hand, gives credit to Seeger as being the first one to call attention to the importance of roentgenological examination in the diagnosis of pancreatic lithiasis. Seeger in 1928 could quote only one case in which (up

2. Seeger, S. J., in *Radiology*, 10:127, 1928.

3. Mayo, J. G., in *Proc. Staff Meet. Mayo Clin.* 11:456 (July 15) 1936.

4. Brook, W. F., in *Lancet*, 2:373-376 (October 21) 1939.

to 1926) the pre-operative diagnosis had been made by this means. Brook explained that variations in calcium content, blurring of outline caused by aortic pulsation, and differentiation of shadows of the stones from those cast by other objects cause difficulty in the diagnosis. He thinks a flat plate should always be made before giving the barium meal, because the barium meal often obscures the stone.

The etiology of pancreatic stone is still obscure. It is generally agreed that inflammation, whether by way of ducts, lymphatics or blood stream, and stasis of secretion are essential causal factors. Normal pancreatic juices contain no calcium carbonate, which is the chief constituent of the calculi, but in the presence of inflammation some change presumably takes place in the process of secretion, resulting in its formation. Its frequent association with disease of the biliary tract points to a common cause. Mayo feels that the etiologic agent is most often to be found in the biliary tract. Both Brook and Mayo divide the stones into two groups: true stones, found in ducts, and "false stones" or calcification of the parenchyma resulting from pancreatitis. The duct stones, by causing obstruction, lead to interstitial pancreatitis by back pressure, and to further stone formation. Brook reported a case of a man of 76 years in which he thought a hypercalcemia might have played a part.

Comment

This case shows several unusual aspects. While we do not know whether the pancreatic calculi antedated the diabetes, it is known that the patient had diabetes thirteen years prior to his death; and that at first he seemed to have a fairly usual type of diabetes. It was noticed as his course was followed that he developed an increasing sensitivity to insulin. We were not able to discover, in looking over the chart, that he ever had a spontaneous hyperinsulinism. As far as we could tell, the shock always followed the giving of some insulin, but the notation occurs time and again that it was hard to regulate his insulin; in fact, it does not seem that it was ever properly regulated. Of course, the cardiac and renal aspects of this case were important, and as far as could be told clinically, death resulted from uremia. It is difficult to see how either of these two conditions could have played any definite part in his peculiar carbohydrate metab-

olism. According to the pathologist's report, the liver showed large areas of necrosis, and, while one cannot be sure, it seems safe to assume that up to a short time before death its glycogenic function was intact.

There is one other thing which should be considered in these cases of pancreatic lithiasis where the destruction of the pancreas seems to be complete—that is, the question of a lipocaic deficiency. Certainly from the pathological examination of the liver there did not seem to be any excess fat present in this particular case. It is a recognized fact that certain depancreatized dogs do not develop evidence of this deficiency⁽⁵⁾, and yet, with an increasing insulin sensitivity, one would have to think of this condition. Wiggers⁽⁶⁾ says that "it does not as yet appear to have been established beyond a reasonable doubt, that the effect exhibited by extracts of the pancreas may not be attributed to their content of choline and protein. Some have claimed that fatty changes in the liver do not occur when the pancreatic duct is ligated and the formation of a pancreatic hormone ought to continue. Ralli and her associates, however, found the same increase in liver fat (estimated chemically) after ligation of the pancreatic duct as in depancreatized dogs."

If the hormone, lipocaic, really exists, then this case would suggest that it, too, is secreted by the cells of the islets of Langerhans; because as far as the pathologist could tell, the rest of the pancreas was destroyed. In a personal communication to one of the authors (W. R. S.), Dragstedt⁽⁷⁾ says that this is in keeping with his investigation on the subject, and he believes that lipocaic comes from the islet cells and probably from the alpha cells.

This patient's pancreatic calculi were not diagnosed *ante mortem*, and yet a review of his x-ray examinations disclosed that one plate showed the stones. A print of this plate is shown. Pain, which is a frequent symptom of this condition, was not prominent in this patient's history, and was recorded only shortly before his death. There was nothing remarkable noted about his stools at any time; in fact, they were reported as normal. The x-ray report men-

5. Dragstedt, L. R., et al.: Lipocaic and Fatty Infiltration of the Liver in Pancreatic Diabetes, *Arch. Int. Med.* 64: 1017-1038 (November) 1939.

6. Wiggers, C. J.: *Physiology in Health and Disease*, ed. 3, Philadelphia, Lea & Febiger, 1939, p. 995.

7. Dragstedt, L. R.: Personal communication to W. R. Stanford, May, 1940.



Print of x-ray film showing pancreatic stone, as indicated by arrow.

tioned in the history certainly should have drawn very definite attention to the pancreas, but it seems to have been lost in the maze of admissions and re-admissions.

Conclusion

While both Mayo and Brook emphasized the fact that the etiological factor of pancreatic calculi is often found in the biliary tract, it would hardly seem that there was enough evidence of chronic disease in this particular case to lead to this assumption. While one cannot be sure whether the pancreatic stones antedated the diabetes or not, it seemed that this patient started off very much like the usual type of diabetic. That there was increasing sensitivity to insulin in this patient appears to be a fairly well established fact. It is a known fact that the pancreas does regenerate itself, but there is nothing in the histological protocol to show that this pancreas did. The fact remains that this patient, while he was subject to hyperinsulinism, was a very severe diabetic up to the time of his death.

It has been our experience in several cases that the diabetic patient who is difficult to regulate often proves to have some complicating factor.

CHRONIC ATROPHIC PYELONEPHRITIS (GOLDBLATT'S HYPERTENSION)

Case Report

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and

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Only very recently have we recognized cases of hypertension which might be classified as the clinical counterparts of Goldblatt's experimental hypertension following renal ischemia. While these cases are rare, the results which follow a correct diagnosis and treatment are so dramatic and gratifying that an isolated case seems worthy of a report. We shall not attempt a review of the ingenious experiments by Goldblatt and others which led to the recognition of this entity, as the reader may readily consult the key references below⁽¹⁾.

Case Report

M. L., a 15 year old girl, consulted her physician (B. D. M.) in September, 1939. This visit was prompted because her blood pressure had been found to be high following a reaction to an injection of novocaine for the extraction of a tooth. The initial reading revealed a systolic blood pressure of 172 mm. of mercury, and a diastolic pressure

1. (a) Goldblatt, Harry: Studies on Experimental Hypertension: V. The Pathogenesis of Experimental Hypertension Due to Renal Ischemia, *Ann. Int. Med.* 11: 69-103 (July) 1937.
- (b) Freeman, N. E., and Page, I. H.: Hypertension Produced by Constriction of the Renal Artery in Sympathectomized Dogs, *Am. Heart J.* 14:405-411 (October) 1937.
- (c) Houssay, B. A., and Fasciolo, J. C.: Experimental Hypertension, *J. A. M. A.* 109:2002 (December 11) 1937.
- (d) Longcope, W. T.: Chronic Bilateral Pyelonephritis: Its Origin and Its Association with Hypertension, *Ann. Int. Med.* 11:149-163 (July) 1937.
- (e) Butler, A. M.: Chronic Pyelonephritis and Arterial Hypertension, *J. Clin. Investigation* 16:889-897 (November) 1937.
- (f) Weiss, Soma, and Parker, Frederic, Jr.: Vascular Changes in Pyelonephritis and Their Relation to Arterial Hypertension, *Tr. A. Am. Physicians* 53:60-73, 1938.
- (g) Barney, J. D., and Suby, H. L.: Unilateral Renal Disease with Arterial Hypertension; Report of Case Apparently Cured Following Nephrectomy, *New England J. Med.* 220:744-746 (May 4) 1939.
- (h) Crabtree, E. G.: Hypertension in Destructive Infected Unilateral Lesions of the Kidney, *Tr. Am. A. Genito-Urin. Surgeons* 31:299-319, 1938.
- (i) Leadbetter, W. F., and Burkland, C. E.: Hypertension in Unilateral Renal Disease, *J. Urol.* 39:611-626 (May) 1938.
- (j) Boyd, C. H., and Lewis, L. G.: Nephrectomy for Arterial Hypertension, *J. Urol.* 39:627-635 (May) 1938.
- (k) Barker, N. W., and Walters, Waltman: Hypertension Associated with Unilateral Chronic Atrophic Pyelonephritis: Treatment by Nephrectomy, *Proc. Staff Meet., Mayo Clin.* 13:118-121 (February 23) 1938.

of 120. An adolescent goiter, tachycardia, nervousness, slight loss of weight, and a slightly increased basal metabolic rate (plus 14 per cent) were discovered during this examination and subsequent visits. Because of these findings, Lugol's solution and rest were given an adequate trial, but did not alter the range of her hypertension. During this time the systolic blood pressure ranged between 162 and 200.

When the patient was seen on January 5, 1940, there were no pressing complaints and no symptoms referable to the hypertension other than an occasional nocturnal headache.

Her past medical history yielded no significant information. There had been no serious medical illnesses, and there was no history of scarlet fever, septicemia, nephritis, pyelitis or other diseases which might have been contributing factors. A tonsillectomy had been performed several years preceding this illness. There was no history of hypertension in the family, except for her maternal grandfather.

Physical examination revealed the patient to be a well developed and alert young girl of 15 years. The temperature was normal, and the pulse rate averaged 100. The head and eyes were externally normal, except for a questionable narrowing of the retinal arterioles. The ears, nose and mouth were negative. There was a slight enlargement of the thyroid gland. There was no appreciable hypertrophy of the heart. The sounds were forceful and tambour in character. The rhythm was normal, and there were no murmurs. The abdominal examination was negative except for a forceful pulsation of the abdominal aorta, which could be readily palpated. All peripheral arterial pulsations were present and equal on both sides, thereby excluding coarctation of the aorta. A neurological examination was objectively negative.

Repeated blood pressure readings were taken over a period of several days and were always found to be uniformly high. The following readings were representative:

	<i>Lying position</i>	<i>Upright position</i>
Right arm:	182/140	188/130
Left arm:	232/136	200/146
Right leg:	220/150	
Left leg:	220/150	

Repeated urinalyses revealed either a 1 plus or 2 plus reaction for albumin, with a specific gravity varying between 1.020 and

1.024. There were also about 25 pus cells per low power field in a catheterized specimen. A complete blood count was within normal limits. The Wassermann test on the blood was negative. The determination of the urea nitrogen in the blood was 18 mg. per 100 cc. The phenolsulfonephthalein test for renal function showed a two-hour total excretion of 65 per cent.

The electrocardiogram showed only a slight left axis deviation and an inversion of the T wave in Lead III. The roentgenogram of the chest was essentially negative, with normal cardiac measurements. A basal metabolic rate determination at this time was plus 4 per cent.

Excretory urography was done, and showed a very small right kidney with a typical urographic appearance of atrophic pyelonephritis, and some apparent compensatory hypertrophy of the left kidney. Cystoscopic examination revealed that the urine from the right kidney yielded pus cells and gram-negative rods. The urine from the left kidney was entirely clear.

The patient consulted a well known clinic where the diagnosis was confirmed and a nephrectomy on the right side advised. This was performed on January 19, 1941, and the following is an excerpt from the operative note:

"The right kidney was exposed and found to be about one-third normal size and contracted, measuring about 5x3½ cm. There was some dilatation of the pelvis and ureter, and an anomalous vessel about 2 mm. in diameter crossed the ureteropelvic juncture, and this probably accounted for the stasis of the kidney. The kidney was removed. The branches of the arciform artery of the kidney stood out quite prominently and the cut ends looked as though there was considerable thickness of the blood vessel wall and diminution in the size of the lumen."

The postoperative convalescence of the patient was uneventful and the reduction in blood pressure was dramatic. Two weeks after operation the blood pressure was 130 systolic, and 90 diastolic, with an elevation to 160 systolic and 105 diastolic in response to the cold pressor test. Six months after the nephrectomy the blood pressure averaged 140 systolic and 90 diastolic; ten months after the operation, the systolic pressure varied between 128 and 144 and the diastolic between 80 and 98; and fifteen months after the operation the systolic blood pres-

sure varied between 140 and 156 and the diastolic between 96 and 106. The higher readings were always obtained during the early part of the examination when the patient was somewhat excited. The cold pressor test for determining the "ceiling" in hypertension has given a normal response on all occasions. The patient has continued to enjoy excellent health and has resumed her normal activities. There are no residual symptoms at the present time.

Conclusions

We have delayed reporting this case until more than a year had elapsed in order to evaluate the remarkable and dramatic results obtained after removal of a kidney which prior to the marked hypertension had caused no symptoms which might have suggested that a chronic atrophic pyelonephritis was present. However, the relationship between such cases of hypertension and the unilateral chronically infected atrophic kidney has been known only for a very few years, and sufficient time has not elapsed since the recognition of this clinical entity to predict the ultimate prognosis. Thus far the results have been most gratifying.

This case also serves to remind us that when we encounter a marked increase in blood pressure in young individuals, we must consider such rare and unusual causes of hypertension as coarctation of the aorta, Wilms' tumor of the kidney, polycystic kidneys, and the paraganglioma tumor of the adrenals in addition to the more usual causes of hypertension.

Gout.—Gout is a chronic degenerative disease with a high familial incidence. It is infrequent but not rare in occurrence and may be unrecognized in the earlier years after its onset. It is predominantly a disease of the male sex and should be suspected in any patient with unexplained pain in the joints of the extremities. The acute attacks occur periodically and in the earlier years after onset of symptoms there is no residual distress following attacks. The diagnosis may be suspected in any patient who presents (a) inflammation about one or more joints, (b) concentration of serum acid about 6 mg. per 100 c.c., and (c) whose pain is alleviated by colchicine. Late in the course of the disease there may be (d) subcutaneous tophi from which urate needles may be recovered and (e) characteristic changes by x-ray. Treatment during the acute attacks embodies the judicious use of colchicine. In symptom-free periods, a diet adequate in minerals, vitamins, and proteins is advised. A liberal fluid intake is important as well as the ingestion, perhaps, of colchicine.—John H. Talbott: Clinical Gout, Rocky Mountain M. J. 38:196 (March) 1941.

INTRAVENOUS ERGOTRATE AT THE END OF THE SECOND STAGE OF LABOR

WALLACE B. BRADFORD, M. D.

and

W. Z. BRADFORD, M. D.

CHARLOTTE

It has long been evident that hemorrhage is one of the most serious problems in obstetrics, and that it materially influences morbidity and mortality. In seeking to lessen blood loss connected with child bearing one must consider the third stage of labor, for it is during this stage that excessive blood loss frequently occurs. Any improvement in the conduct of the third stage of labor should decrease the blood loss of the mother and should be reflected in improved morbidity statistics.

In an effort to accomplish this end, and prompted by the observation by one of us of the conduct of the third stage of labor at the Chicago Lying-In Hospital, we have recently changed our own technique. It is the purpose of this paper to present briefly the results obtained in a small series of 72 private obstetrical patients delivered between October, 1940, and February, 1941, who were given one ampule (1/320 grains) of ergotrate intravenously just at the onset of the third stage of labor. We believe that this technique has resulted in lessened blood loss, shorter duration of the third stage, and a lower maternal morbidity.

Usually a blood loss of over 500 cc. is considered a postpartum hemorrhage. According to M. E. Davis⁽¹⁾, the ideal conduct of the third stage of labor consists in recognizing placental separation and delivering the placenta promptly when this has occurred. Pituitrin intramuscularly probably does not affect the uterus for several minutes, and hence in many cases would not influence placental separation even when given immediately after the birth of the baby. Ergotrate seems to be safe even when given intravenously, acts promptly, has a prolonged action as compared to pituitrin, and apparently does not cause "allergic phenomena" such as "pituitary shock".

"If the phase of placental separation is

Read before the North Carolina Obstetrical Society, Pinehurst, March, 1941.

1. Davis, M. E., in *Am. J. Surg.* 48:154-163 (April) 1940.

entirely a physical phenomenon and is the result of a sudden reduction of surface area of the placental site, then theoretically the more rapidly this reduction takes place, the more complete is placental separation."⁽¹⁾ To accomplish this reduction we have been giving 1/320 grains of ergotrate intravenously as soon as the head is delivered, and have found that the uterus contracts promptly and that the placenta is usually expelled in one to three minutes, often with practically no blood loss. This tonicity is maintained for some time and is probably responsible for lessened bleeding after the patient returns to her room, and for a lowering of "uterine" morbidity.

We have had no cases of incarceration of the placenta in the contracted uterus, but the possibility of such an accident exists, and hence this type of procedure should be one for hospital practice. A nurse or assistant is needed to administer the drug intravenously at the right time, and this factor is also against its routine use in home obstetrics. The most frequent causes of postpartum hemorrhages are incomplete placental separation—which is often due to uterine atonia—and failure to express the separated placenta promptly. Intravenous ergotrate, we believe, lessens the possibility of these two occurrences.

Pastore⁽²⁾ in his study of blood loss in the third stage of labor reports the following figures. In 574 consecutive cases no intravenous ergonovine was used. The average blood loss was 244.3 cc. and the duration of the third stage was as follows:

- Under three minutes—26 cases.
- Three to thirty minutes—440 cases.
- Over thirty minutes—34 cases.

J. Davin and T. N. Morris⁽³⁾ reported a series of cases in which 1 cc. of basergin was given intravenously at the onset of the third stage. Their average blood loss was 133.1 cc., and the average duration of the third stage was 2.3 minutes. Tritsch and Behm⁽⁴⁾ of New York used the same drug and found the duration to average 2.95 minutes, and stated that the blood loss was definitely lessened. Their maternal morbidity was only 4 per cent.

The results in our series of 72 patients are as follows:

2. Pastore, J. B., in *Am. J. Ob. and Gyn.* 31:78 (January) 1936.
3. Davin, J. and Morris, T. M., in *M. Ann. District Columbia* 9:1 (January) 1940.
4. Tritsch, J. E. and Behm, K. H., in *Am. J. Ob. and Gyn.* 34:676 (October) 1937.

Parity:

- 46 primigravida
- 26 multipara

Type of delivery:

- 33 spontaneous
- 32 forceps
- 7 cesarean sections
- 1 pre-eclampsia and chronic cardiovascular-renal disease.

Indications for cesarean section:

- 2 placenta praevia
- 2 previous section for disproportion
- 2 disproportion and trial labor

Analgesia:

- 53 nembutal and scopolamine
- 19 other analgesia

Anesthesia:

- 44 nitrous oxide
- 9 cyclopropane
- 9 ether
- 7 local
- 3 local and nitrous oxide

Maternal deaths—0

Stillborn infants—0

Infant deaths—3 (prematurity)

Duration of third stage (65 vaginal deliveries):

- 1-3 minutes — 46
- 4-5 minutes — 13
- 6-10 minutes — 1
- Over 10 minutes — 5
- Average—4.5 minutes.

Blood loss (65 vaginal deliveries):

- 0- 50 cc. — 46
- 51-100 cc. — 8
- 101-200 cc. — 6
- 201-300 cc. — 5
- 201-300 cc. — 5
- Over 300 cc. — 0
- Average 77 cc. (estimated)

Morbidity (65 vaginal deliveries):

- 3 cases (1 pyelitis, 2 endometritis)—4.5 per cent.

The average duration of the third stage in this series is somewhat prolonged by occasional failure to express the placenta immediately after separation. We feel that in general the placenta should be expressed before the episiotomy or lacerations are repaired. We would anticipate a greater blood loss and longer third stage in this series of private hospital patients because of the high operative incidence, the fairly heavy seda-

tion, and the usual use of general anesthesia. Our average blood loss is an estimated figure which may be too low; however if we allow 100 per cent for error, the loss would be only 150 cc.

Conclusions

1. The series of cases presented is in itself too small to furnish any conclusions.

2. Together with the work and presentations of others this report supports the following beliefs:

- (a) That intravenous ergotrate is relatively safe to administer at the end of the second stage of labor.
- (b) That its use shortens the duration of the third stage.
- (c) That the blood loss in the third stage is lessened.
- (d) That the resulting improvement in the conduct of the third stage of labor may tend to lessen maternal morbidity.

SWIMMING POOL SANITATION

HAROLD B. GOTAAS

CHAPEL HILL

During recent years bathing pools have become accessible to a large part of the population, and have to a large extent replaced the "old swimmin' hole" of a generation ago. The bathing pool has developed as an institution for the purpose of improving public health by providing physical education and recreation for both children and adults; yet it may be, and many times is, a decided menace to public health.

Usually the departments of public health have the responsibility of sanitary supervision and protection of the public from infections due to contaminated bathing pools. Their efforts will, to a large extent, determine whether the bathing place is beneficial or detrimental to public health.

The bathing pool in reality is nothing more or less than a community bathtub where the possibilities for the transfer of infections among bathers are many. The intimate contact of the bathers with a common medium in which an infective organism may remain viable long enough and in large enough concentrations to infect bathers, and the effect of too strong a concentration of

disinfecting agent on the bathers, make difficult the maintenance of proper barriers to the transfer of infection.

The effect of relatively close contact between large numbers of people on the transfer of infection has long been recognized in the field of public health. One isolated person can infect only himself; two people can infect each other by two possible avenues; three by six avenues; four by twelve avenues, and so on. It is recognized that the number of bacteria in a pool increases with the number of bathers, and that the hazards also increase.

Bathing Pools and the Spread of Disease

There is a scarcity of epidemiological information concerning the transmission of disease in bathing pools. More epidemiological studies of swimming pools would add much to the clarification of swimming pool control. In the literature, we find typhoid fever, infections of the genital system, conjunctivitis, trachoma, jaundice, and Weil's disease recorded and described as having been contracted in bathing pools. The infections considered most common to bathing pools are those of the upper respiratory tract (nasopharynx and sinus infections, septic sore throat, and colds), middle ear infections, and skin diseases—particularly so-called "athlete's foot".

The diseases transmitted by bathing waters might be divided into two classes: (1) those diseases that are spread between bathers in small pools where the water comes from a clean unpolluted source, and (2) those diseases which might be contracted from bathing places where the water is polluted with sewage.

It is logical that the infections of the respiratory tract and the ear would be most prevalent, since the water in the pool at the time of swimming is contaminated with washings of the mucous membrane of the nasal chambers and mouth of every swimmer. In the majority of cases the water gets well into the nasal passages and ears of the swimmer, carrying with it the contamination of the pool, and bacteria that are present in the bather's nose and mouth. Since bathers are often very close to each other in the water, it is possible for this type of infection to be transferred before ample time has elapsed for the disinfecting process to diminish appreciably the number

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of bacteria. This bacteriological condition in bathing pools is not indicated by the ordinary bacteriological tests made on bathing pool waters.

The section on Laryngology, Otology and Rhinology of the American Medical Association has reported valuable information concerning the respiratory tract and middle ear infections among bathers.

Dr. Hasty⁽¹⁾ points out that the water produces temporary shrinkage and bleaching of the mucuous membranes adjacent to the openings of the sinus, making possible the direct entrance of contaminated water into the sinuses, where there is probably little local resistance to the bacteria. The shrinkage of the membrane also causes congestion of circulation and obstructs drainage from the sinuses, creating a situation favorable for the development of bacteria.

Dr. Marshall Taylor⁽²⁾ has emphasized that man is naturally not a swimming animal and structurally is not equipped with the natural protections provided swimming animals. Aquatic animals possess muscles which voluntarily close the nostrils when under water, and flaps or valves which close and protect the ears. Dr. Taylor concludes that bacteria which can cause infections may be present in the bather's nose, and that the water breaks down the barriers which had prevented prior infection.

Bathers too often consider a sinus infection, a middle ear infection, or skin infections as being merely a coincidence. Whether or not a certain infection is due to contamination of the bathing pool is difficult to prove, and possibly because of this some very unsanitary pools are used.

It is doubtful if any bathing pool can be kept in such condition that it is absolutely safe for all bathers, as is sometimes claimed for certain pools; however, there are risks in all sports, and the risks of swimming can be kept low by providing the necessary facilities and exercising the proper sanitary control.

Sanitary Control of Bathing Pools

The facilities of bathing places vary from those common to the "old swimmin' hole" to those of the modern pool which uses water of the drinking standard and filtration, to-

gether with chemical treatment for purification. Modern pool facilities and improved design make it possible to reduce to a minimum the hazards common to bathing places. However, this minimum cannot be reached without proper use and control of the facilities.

There are several control measures which must be practiced even in the best designed pools.

Bacteria Quality of the Water: The present bacteria tests for bathing places make use of the confirmed test for the colon-aerogenes bacteria and the total twenty-four hour count at 37 C. on nutrient agar. The total plate count is indicative of the gross pollution in the pool, while the confirmed test shows pollution from the intestinal tract. The presence of various streptococci and staphylococci in the water may be of greater significance than the colon-aerogenes bacteria because of their association with respiratory and skin infections, and because of the large numbers which may be discharged from the nose and mouth. While no standard for streptococci has been developed, the presence of large numbers of streptococci should cause concern as to the sanitary condition of the pool.

Disinfection: A bathing place disinfectant should not only destroy the bacteria, but should destroy them rapidly, since the time the bacteria are in the water while passing from one bather to another may be very short. Chlorine and chloramines are the most widely used. Chlorine destroys the bacteria more rapidly than chloramine, but it is thought that chloramine is less irritating to bathers. Disinfection by adding hypochlorite powder directly to the pool from time to time is of doubtful value, because a residual will be absent when it is most needed.

The residual chlorine content is one of the best indexes of the sanitary quality of the pool water, and should be checked often by the pool operator to see that it is kept within the desirable range. The bathing suit and the body of the bather exert a demand on the residual chlorine and when a large number of bathers are in the pool the residual chlorine in the pool may be reduced from 0.4 or 0.5 parts per million to practically no residual unless the chlorine dosage is increased.

Bathing Load: The possibility of the transfer of infection among the bathers in-

1. Hasty, F. E.: Paranasal Sinus Infection and Swimming. J.A.M.A. 89:507 (August) 1927.
2. Taylor, H. Marshall: Otitis and Sinusitis in the Swimmer, J.A.M.A. 113:891-894.

creases greatly with an increase in the number of bathers in the pool. Five to eight hundred gallons of water per bather between recirculation or changes of the pool water is a basis for determining the maximum allowable bathing load. Because of the relationship between the bathing load and the opportunity for the transfer of infection, as well as the effect of the bathing load on the chlorine residual, it is important that the bathing load be controlled.

Overflow Gutters: The scum gutter is a means of carrying away the floating contaminating material, and is a place into which bathers can expectorate water and phlegm after diving. Some pools close the scum gutters to save water. This practice makes for unsanitary conditions and should be avoided.

Dressing Rooms: Skin infections, such as so-called "athlete's foot", are readily spread in the dressing room. The floors and benches of the dressing room and the walkways should be cleaned by washing with a disinfecting solution of chlorine. Foot baths containing 0.3 to 1.0 per cent available chlorine should be so located that the bathers must pass through them in going to and from the pool. Warm water for the showers is essential; without it, the bathers will neglect proper showering before entering the pool.

Personal Regulations and Supervision of Bathers: Probably the most effective means of controlling the sanitary conditions of a pool is to control the bathers. Personal regulations should be posted regarding a soap and warm water shower bath in the nude before entering the pool, the use of foot baths, the use of toilets, the exclusion from the pool of any person having a skin disease, sore or inflamed eyes, colds, nasal or ear discharges, any communicable disease, or cuts, blisters, and open sores; and forbidding spitting and blowing the nose into the pool, together with information concerning the risks that may accompany bathing in unsanitary pools. The posting of regulations will be ineffective unless they are accompanied by supervision.

The writer believes that public health officials can accomplish a great deal toward better swimming pool sanitation through instruction of the bathers and the pool attendants in personal hygiene and sanitation. The life guards and pool supervisors usually have had considerable instruction in the principles

of life saving and artificial respiration, but very often are poorly informed concerning the hygiene and sanitation of bathing pools, which is of great importance in their work. At many public pools, instruction on swimming and life saving is provided for children; if this instruction included information on the hygiene and sanitation of bathing pools, the bathers themselves would help to keep the pool clean and sanitary. They would observe hygienic precautions themselves, and for their own protection would see to it that their fellow bathers attempted to maintain sanitary conditions.

Public health departments cannot keep the risks of swimming pools at a minimum by occasional routine examinations of the pool. The routine examination of the pool will disclose critical situations and will aid the operators and attendants with their control problems, but the effective sanitary control requires the continuous efforts of the operator, attendants and bathers under the general direction of the health department. Unless the attendants and bathers cooperate in keeping the pool sanitary, other control measures will be only partially effective, and the pool may be a health menace.

Discussion

President Elliott: Dr. Carlton will open the discussion of Dr. Gotaas' paper.

Dr. R. L. Carlton (Winston-Salem): I thank the doctor for his paper, which is a very timely one.

There are just a few essentials for safe bathing: Pure, clear, alkaline water; chemical disinfection; clean suits and towels; shower baths and toilets; clean locker and dressing rooms; pre-entrance examinations; fenced enclosures; concrete runways; scum gutters; no overcrowding; safe drinking water; and an adequate number of lifeguards and attendants. These being provided, with proper maintenance and adequate supervision, swimming is a relatively safe sport.

Dr. J. A. Whitaker (Rocky Mount): Professor Gotaas has covered this subject so thoroughly that there isn't much left to be said. However, I think that those of us who are public health officials advocating sanitation principles commonly make the mistake of allowing our enthusiasm to get ahead of epidemiological data.

Even though swimming pools are common bath-tubs, the fact remains that it is difficult to find convincing evidences of serious epidemics that can be attributed to them. My Board of Health asked me last year what was the actual danger from our old dip, fill and draw pool. The epidemic of so-called swimming pool fever had been attributed to our pool, but on closer investigation I found that this vague illness was coming from other pools and creeks also, including some of those that were managed under modern sanitary methods. I was an enthusiastic supporter of the idea of a new properly controlled pool—and we have such a pool now under construction—, but it is difficult to find

data to support the contention that the old bathing place was dangerous. It is probable that as long as violent water exercises are indulged in there will be otitis media and sinusitis from the very factors that Professor Gotaas brought out.

The doctor in Nashville, Tennessee, from whose paper he quoted, has brought out the probability that mucous membrane tissue adjacent to the openings of the sinuses are shrunk and bleached by exposure to water, even pure water. That being true, diving or swimming produces such violent changes in the atmospheric pressure of the upper respiratory tract that it is natural that bacteria, pathogenic bacteria, common to mucous membranes, would be forced into those sinuses and into the eustachian tubes.

I would like to emphasize again that when a community spends thousands of dollars constructing a modern swimming pool, it shouldn't attempt to economize falsely by employing individuals who are not trained both in the theory and in the practice of operating those pools. The operation of a swimming pool should not be in the hands of an amateur. It requires both technical skill and knowledge of the principles involved. The operator should know what he is doing when he operates the chlorinator. He should know better than to leave the aluminum sulphate feed open all day. Unless he understands the rudiments of the theory involved he will never operate the pool properly.

In addition to the technical operation, there is the factor of discipline. I think, as Professor Gotaas and Dr. Carlton told you, that management of the bathers is as important if not more important than the management of the water.

I would like to read from a supplement, Number 139, to the Public Health Reports: "While there might be an apparent scarcity of epidemiological indictments of the old type swimming pool, there is the fact that sporadic diseases are undoubtedly due to poor sanitation and bathing water. One reason, I believe, that we don't have more epidemics, is the fact that most bathers swallow very little water, and another factor is that there is a rapid turnover of water in most bathing places.

"Therefore, the same factors which make public drinking supplies dangerous don't necessarily operate as regards public bathing places."

It is agreed that common sense public health programs must recognize that bathing in polluted water is a potential danger, that unsanitary conditions surrounding public bathing places are a hazard, and that common decency as well as health consideration dictates that steps should be taken to secure for bathers clean environments.

At the Bedside.—Medical discussions at the bedside require careful consideration. Some able psychiatrists have warned of the psychic trauma of such medical talks and have advised that discussion of the patient's condition should always take place outside the sick room. But the situation, in my experience, is not so simple. The physician's contact with the patient in the hospital is too limited at best. If discussions at the bedside are conducted with discrimination and tact, they can be used as an effective therapeutic influence in reassurance. In many instances such indirect familiarization of the patient with his condition, with the reasons for the advised treatment and for the optimistic prognosis has a most beneficial result. A patient is more apt to resent too little rather than too much discussion of his condition.—Soma Weiss, M.D.: *The Medical Student Before and After Graduation*, J. A. M. A. 114:1714 (April 27) 1940.

RADICAL PERINEAL PROSTATECTOMY FOR CARCINOMA

JOHN E. DEES, M. D.

DURHAM

Carcinoma of the prostate is a very common disease, and in some respects a neglected one. Young⁽¹⁾, in analyzing 4,300 cases operated upon for prostatic obstruction at the Johns Hopkins Hospital, found that the obstruction in 10.7 per cent was due to carcinoma. Of the last 236 transurethral prostatic resections carried out at the Duke Hospital, 12.3 per cent were for carcinoma of the prostate. In 292 routine autopsies on men over 50 years of age, Rich⁽²⁾ discovered occult or outspoken carcinoma of the prostate in 14 per cent. Moore⁽³⁾, in a similar but more detailed study of 323 autopsies on men over 40 years of age, found carcinoma of the prostate in 19.2 per cent. Kahler⁽⁴⁾, in a series of over 600 autopsies on men over 50, found prostatic carcinoma in 17.3 per cent. The United States Mortality Statistics for 1934 show that during that year 10.07 per cent of all carcinoma deaths in the male sex were due to carcinoma of the prostate, and in 1936 this disease accounted for 10.9 per cent of all cancer deaths in men. Carcinoma of the prostate was the cause of death more frequently than carcinoma of any other internal organ in the male, with the exception of the stomach and rectum.

Moore's pathological study brought out several most interesting facts. Of the 63 prostatic malignancies in his series, 52 were small, without metastases, and were limited to one anatomical lobe of the prostate, so that their points of origin could be determined. Seventy-three and 5 tenths per cent arose in the posterior lobe, 8.8 per cent in one lateral lobe, 14.8 per cent in the anterior lobe, and in only 2.9 per cent did the carcinoma arise within an area of benign prostatic hypertrophy. This is of great clinical importance, as it shows that over 80 per

From the Department of Surgery, Urological Division, Duke University Medical School and Duke Hospital.

Read before the Durham-Orange County Medical Society, January 10, 1941.

1. Young, H. H.: Ultimate Results of Treatment of Carcinoma of Prostate by Radical Removal of Prostate, Vesical Neck and Seminal Vesicles, *J. Urol.* 29:531 (May) 1933.
2. Rich, A. R.: On Frequency of Occurrence of Occult Carcinoma of Prostate, *J. Urol.* 35:527 (March) 1935.
3. Moore, R. A.: Morphology of Small Prostatic Carcinomata, *J. Urol.* 33:224 (March) 1935.
4. Kahler, J. E.: Carcinoma of Prostate Gland: Pathologic Study, *J. Urol.* 41:557 (April) 1939.

cent of prostatic carcinomas begin in the posterior or lateral lobes of the prostate where they can be readily palpated and diagnosed in an early stage by rectal examination. Moore feels that metastases and invasion outside of the prostate are late manifestations of the disease, and he showed clearly that carcinoma and benign hypertrophy of the prostate were two distinct diseases occurring independently of each other.

The importance of early recognition of cancer while it is still in a curable stage is fully appreciated both by the medical profession and by the layman. They are on the alert for an ulcer that does not heal, a lump in the breast, or bleeding from any of the body orifices. Unfortunately, however, carcinoma of the prostate is silent in its early stages and usually remains asymptomatic until far advanced beyond the hope of cure. The discovery of early prostatic cancer, therefore, depends entirely upon the physician, and only by frequent routine rectal examination of all men over 50 years of age can we hope to make real progress against this common form of cancer. An indurated nodule or diffuse induration in a portion of the prostate should be viewed with suspicion, and cancer should be proven or ruled out—if necessary, by biopsy. Occasionally an early prostatic carcinoma is discovered because attention is directed to the prostate by obstructive symptoms arising from a co-existing benign prostatic hypertrophy. Rarely, the pathologist discovers carcinoma that had not been recognized clinically in the microscopic study of tissue removed at transurethral resection. However, carcinoma arises from the periphery of the prostate, and the juxta-urethral portion is involved late.

With nothing to offer a patient with early prostatic carcinoma except palliative measures, there is little incentive to its early recognition. Because, in the past, cases of early carcinoma of the prostate have rarely been discovered, and because most of these patients are first seen with far advanced cancer, the attitude towards the disease in general is a defeatist one. As a result, palliative procedures directed toward the relief of symptoms in advanced cases have become so highly perfected that there is a great tendency to apply these procedures even to those cases of early prostatic carcinoma which are possibly curable. There is no intention of discrediting procedures for pallia-

tion of advanced carcinoma. Transurethral resection gives immediate and dramatic relief from the symptoms of bladder neck obstruction. Deep x-ray therapy is of great value in relieving metastatic pain, and implantation of radium, in some cases, may slow the growth of the neoplasm. None of these measures, however, offer any hope of cure of the disease.

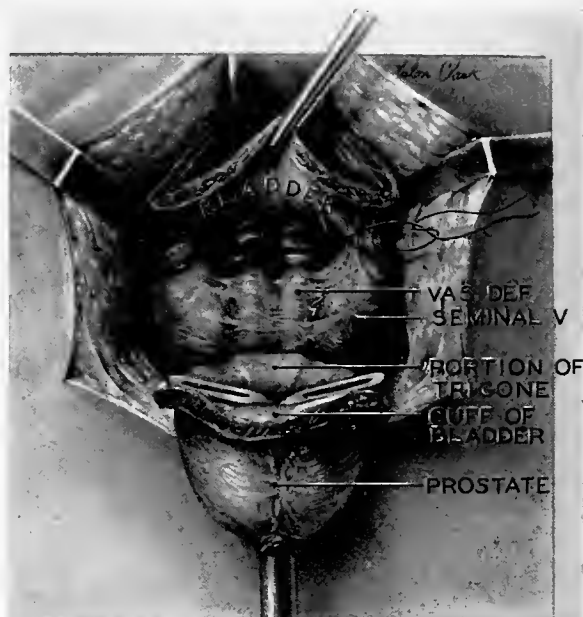


Fig. 1. Operative specimen removed at radical perineal prostatectomy.

The only procedure offering a chance of actual cure in clinically recognizable prostatic cancer is radical surgery, best exemplified by Young's radical perineal prostatectomy. Through a perineal approach the entire prostate, with its capsule, the bladder neck, the distal half of the trigone, the seminal vesicles, and the ampullae of the vasa are removed in one block (fig. 1). The external urethral sphincter is left undisturbed, and to it is anastomosed the bladder defect. Objections that have been raised to this operative procedure are fourfold—namely, technical difficulty, operative mortality, urinary incontinence, and the question of the ultimate result. Technically, the operation is usually not a difficult one for any urologist familiar with perineal surgery. There have been six hospital deaths in a total of 91 radical prostatectomies performed at the Johns Hopkins Hospital⁵. The operation can usually be carried out in from one and a half to two hours, and when contrasted

5. Colston, J. A. C.: Surgical Treatment of Carcinoma of Prostate, *New England J. Med.* 223:205 (August 8) 1940.

TABLE I
Reported Results of Treatment for Carcinoma
of Prostate

Author	No. Cases	Treatment	Survival			
			2 yrs.	3 yrs.	4 yrs.	over 5 yrs.
Barnes ⁽⁶⁾ (1940)	146	Resection	40%	—	—	—
Wishard ⁽⁷⁾ (1940)	69	Resection	—	—	1.4%	—
Thompson ⁽⁸⁾ (1938)	107	Resection	—	—	—	9.3%
Caulk ⁽⁹⁾ (1937)	129	Resection, x-ray and radium	—	30%	18%	12%
Bumpus ⁽¹⁰⁾ (1926)	178	Prostatectomy (enucleation)	—	—	—	11.7%
Barnes ⁽⁶⁾ (1940)	27	Resection and x-ray	48%	—	—	—
Hager ⁽¹¹⁾ (1937)	396	Various types	—	—	—	1.7%
Barnes ⁽⁶⁾ (1940)	113	Suprapubic cystostomy	29%	—	—	—
Bumpus ⁽¹⁰⁾ (1926)	122	Radon	—	—	—	3.3%
Ferguson ⁽¹²⁾ (1937)	43	Radon	33%	9.3%	7%	2.3%
Barringer ⁽¹³⁾ (1936)	351	Radon	—	8.3%	—	5.7%
Barnes ⁽⁶⁾ (1940)	45	X-Ray	44%	—	—	—
Nisbet ⁽¹⁴⁾ (1935)	48	X-ray	—	4%	—	—

TABLE II
Reported Results of Radical Perineal Prosta-
tectomy for Carcinoma

Author	No. Cases	Operative Mortality	Survival
Young ⁽¹⁾	50	4 (8%)	33 cases were operated upon more than five years previously. Of these 16 lived, or are living, 5 to 20 years without evidence of recurrence, 13 being over 7 years postoperative.
G. G. Smith ⁽¹⁵⁾	50	5 (10%)	25 died of recurrence, 6 living 5 to 9 years postoperative; 6 died of intercurrent disease without recurrence; 14 are alive and well a few months to 7 years. Total of 11 lived over 5 years.
Wildbolz ⁽¹⁶⁾	40	3 (7½%)	In 35 cases followed, 13 died of metastases; 4 of intercurrent disease in 1½ to 3 years; 6 are living and well, 1-3 years; 10 are living without recurrence, 3-15 years; 2 recurred at 6 and 9 years.
Hinman ⁽¹⁷⁾	12	—	No statistics. 1 alive 10 years.
Reinick ⁽¹⁸⁾	12	6 (50%)	4 cases living without recurrence 1 to 2 years; 1 recurrence; 1 not followed.
Leadbetter ⁽¹⁹⁾	4	0	All living without recurrence less than 1 year with perfect control.
Dees	8	0	All living without recurrence 3 months to 2½ years. 7 have perfect control.

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with certain other operations aiming at the cure of cancer, such as combined resection of the rectum, it seems by no means formidable. Urinary incontinence, which occurred in a fairly large proportion of cases done early in the development of the operation, has largely been eliminated by recent refinements of Young's original technique, especially in the anastomosis between the bladder defect and the membranous urethra. Seven of the author's 8 cases have perfect urinary control, although three were several months after operation in acquiring it. Colston⁽⁵⁾ reports that 68 per cent of the last 34 radical prostatectomies performed at the Johns Hopkins Hospital have excellent or good urinary control, and none were totally incontinent. This is about the average result obtained by others during the past three or four years.

In order to compare the ultimate results obtained from radical prostatectomy with those obtained from various palliative procedures, the data presented in tables I and II have been collected from the recent literature. The difficulty in proving a cure in cancer of any type is fully realized. A fair number of cases subjected to radical perineal prostatectomy have died of metastases six, seven or eight years after operation. One case, recently reported by Colston, died of heart disease thirteen years after subtotal radical perineal prostatectomy. Autopsy disclosed prostatic carcinoma cells only in the tips of the seminal vesicles which had not been removed at operation, and there were no metastases. Therefore, "cure" in its clinical sense must signify simply the absence of demonstrable local recurrence or metastases or symptoms attributable to one of these for a specified number of years.

It is true that the patients on whom radical perineal prostatectomy were carried out had clinically smaller and less advanced carcinomas than did most of the patients in the group depicted in Table I, many of whom were far advanced cases. However, in the group treated conservatively, carcinoma in many of the patients surviving for more than four years was diagnosed only from microscopic study of the surgical specimen, and accordingly represents a much earlier lesion than those in the group subjected to radical removal.

The selection of radical prostatectomy must still remain an individual problem in each case. Certainly, there must be no me-

tastases demonstrable by x-ray, and the carcinomatous process must be confined within the capsule of the prostate. The patient's life expectancy, as determined by age, and the presence or absence of serious constitutional disease, must also be taken into account.

In summary, three points should be re-emphasized. Carcinoma of the prostate is a very frequent disease, accounting for over 10 per cent of all carcinoma deaths in the male. Real progress against this disease depends mainly upon its early recognition through routine rectal examinations on all men over 50. Radical prostatectomy is the only chance for cure of prostatic carcinoma, and is indicated in most cases recognized in their early stages.

Acute Pyelonephritis. — Acute pyelonephritis is the commonest disease of the kidneys. Its clinical features correspond to those recognized under the term, "pyelitis." In our experience the infection almost always involved the renal parenchyma as well as the pelvis, and hence "pyelitis" is a misnomer. The nature of the parenchymatous involvement is essentially the same, irrespective of the type or origin of the infection. Occasionally infection of the interstitial tissue without involvement of the nephron accounts for cases with all the systemic manifestations of the disease, including pain of renal origin, but without the characteristic urinary findings. Acute vascular lesions develop at times in the early stage of pyelonephritis, and it is of special interest that in some cases hyperplastic arteriosclerosis developed within as short a time as six months after the onset of infection. Arterial hypertension, however, is usually absent in acute pyelonephritis. This observation is in harmony with previous conclusions that under certain circumstances severe obliterative arterial or arteriolar lesions may develop within as short a period as a month or two.—Soma Weiss and Frederic Parker, Jr.: Relation of Pyelonephritis and Other Urinary-Tract Infections to Arterial Hypertension, *New England J. Med.* 223:960 (December 12) 1940.

Emotional Causes of Fatigue. — In one hour of frantic worrying, or in one riot of emotion over some little happening, or in one "post mortem" over some unpleasant experience or ancient family row, a woman will use up more energy than a calm sensible person uses in a day. Some of these persons are so psychopathic, touchy, shy, diffident, or irritable that all the problems of working and living and adjusting to contact with their fellows are difficult and wearying. Others, and particularly women about the age of forty, are perfectionists: They want everything just so, and they wear themselves out trying to reform husband and to make the home spotlessly clean. — Walter C. Alvarez: What's Wrong With the Patient Who Is Always Tired?, *Minnesota Medicine*, 23:788 (November) 1940.

GASTRIC HEMORRHAGE AND THE ANDRESEN DIET

C. T. SMITH, M. D., F. A. C. P.

ROCKY MOUNT

In his article on the treatment of gastric hemorrhage, published in 1927, Andresen⁽¹⁾ set forth four requirements for treatment:

(1) A clot or clots must be permitted to form at the site of the bleeding. To encourage clot formation, the patient must be kept quiet and his mind put at ease. As the restlessness in hemorrhage is due to fear and thirst, something to combat the thirst at the onset is desirable, and a liquid diet is more reassuring than starvation.

(2) The blood pressure, lowered as a result of the hemorrhage, must not be raised so suddenly as to blow out these clots. Small transfusions—150 to 200 cc.—may be used at first to introduce new coagulation factors into the patient's blood. In the absence of compatible donors, 10 to 20 cc. of human blood may be injected into the muscles. Later the larger transfusions may be used.

(3) Shock must be combatted but not overtreated, as too much stimulation often results in recurrent hemorrhage. To combat shock he suggests the use of morphine and replacement of the blood volume. The Andresen formula taken by mouth will replace the fluid volume in moderately severe hemorrhage, but in the more severe cases the physician will have to decide whether to give the patient intravenous saline or small transfusions, or to take the risk of raising the pressure with large transfusions.

(4) Digestion of the edges of the blood vessel wound by the gastric juices must be prevented if possible. Andresen's formula is particularly effective in meeting this requirement. He recalls that one of two conditions is present in the stomach after hemorrhage: It is either empty or filled with partially digested clots. The high protein content of the clots stimulates secretion of gastric juices. As an empty stomach is never at rest, the stomach should be kept partially filled with a soothing substance that will mix

with the secretions and favor coagulation. He feels that all of these requirements are met in a gelatin solution flavored with orange juice and fortified with lactose. Four to six ounces of this is fed every 1½ or 2 hours for two or three days, then alternated with cereal gruel, milk, cream and lactose mixtures. At the end of eight days a regular ulcer diet is given. The gelatin and gruel mixtures are given just slightly warm. Andresen deplors the use of ice internally as well as externally because of the congestion it induces.

Andresen Diet For Treatment of Gastric Hemorrhage

	Ounces	Gm.
Gelatin solution		
Gelatin	1	20
Lactose	3	90
Juice of 1 orange		
Water	32	1,000

Gruel mixture No. 1:

Cereal gruel (oatmeal, barley or cornmeal)	16	500
Milk	14	420
Cream	4	120
Lactose	3	90

Gruel mixture No. 2:

Cereal gruel (oatmeal, barley or cornmeal)	12	350
Milk	32	1,000
Cream	4	120
Lactose	4	120

First and second days:

Gelatin solution	4 ounces
Feedings every 1½ hours.	

Third day:

Gelatin solution	4 ounces
Gruel mixture No. 1	4 ounces
Feedings every 1½ hours.	

Fourth day:

Gelatin solution	5 ounces
Gruel mixture No. 1, alternating..	5 ounces

Fifth and sixth days:

Gelatin solution	6 ounces
Gruel mixture No. 1, alternating..	6 ounces

Seventh and eighth days:

Gelatin solution	6 ounces
Gruel mixture No. 2, alternating..	6 ounces

Add to gruel mixture, each time, one of the following: 3 ounces cereal, 1 soft poached egg, custard or jello.

Feedings every 2 hours.

Ninth day and thereafter:

Long Island College Hospital Ulcer Diet.

X-ray studies are not made for two weeks and preferably not until the fourth week.

The Andresen treatment has been used routinely for the past three years by Dr. J. G. Smith and the author on all patients entering Park View Hospital with gastric hemorrhage.

Read before the Seaboard Medical Association of Virginia and North Carolina at Washington, N. C., December 4, 1940.

1. Andresen, A. F. R.: The Treatment of Gastric Hemorrhage, J. A. M. A. 89:1397 (October 22) 1927.

Patient	Sex	Age	R. B. C. (Millions)	Hemo- globin Per Cent	Hema- temesis	Melena	Trans- fusion	Diagnosis	Result	Days Stay
1 E. E. P.	M	56	4.32; 3.83; 4.43	80	Yes	Yes	No	Undetermined	Relieved	15
2 R. T. J.	M	41	4.31; 3.14; 3.29	84	Yes	Yes	No	Marginal Ulcer	Relieved	9
3 J. H. S.	M	53	4.10; 3.60; 3.80	87	Yes	Yes	No	Hypertension	Relieved	3
4 M. P.	F	54	3.22; 3.31	64	No	Yes	No	Marginal Ulcer	Relieved	11
5 I. C.	M	47	1.81; 2.75	38	No	Yes	II	Duodenal Ulcer	Relieved	7
6 W. M. W.	M	49	1.96; 3.54	45	Yes	Yes	III	Duodenal Ulcer	Relieved	9
7 R. W. S.	F	77	2.48; 3.47	51	Yes	Yes	I	Marginal Ulcer	Relieved	12
8 C. L. B.	F	71	1.09; 3.56	71	Yes	Yes	I	Undetermined	Relieved	10
9 E. M.	M	23	4.61; 4.04	75	Yes	Yes	No	Undetermined	Relieved	14
10 B. T. D.	M	64	3.68; 3.94	55	No	Yes	III	Gastric Ulcer	Relieved	14
11 W. H. P.	M	44	4.34; 2.66; 3.29	58	No	Yes	I	Undetermined	Relieved	23
12 S. T. R.	F	61	4.02; 3.70	77	Yes	Yes	No	Undetermined	Relieved	17
13 R. W. S.	F	78	2.67; 2.32; 3.53	32	Yes	Yes	IV	Marginal Ulcer	Died	3
14 W. T. S.	M	30	4.30; 4.00	80	Yes	Yes	No	Duodenal Ulcer	Relieved	10
15 T. C. L.	M	70	3.69	60	Yes	Yes	No	Undetermined	Relieved	14
16 J. A.	M	52	4.05	71	No	Yes	No	Duodenal Ulcer	Relieved	14
17 J. W. S.	M	41	3.19; 2.46; 3.10	32	Yes	Yes	I	Alcoholic Hepatitis	Relieved	12
18 W. W.	M	72	1.85; 3.74	27	No	Yes	II	Hypertension	Relieved	16
19 J. W. S.	M	41	1.87; 1.11; 2.60	25	Yes	Yes	II	Alcoholic Hepatitis	Died	4
20 M. H.	M	24	1.17; 3.22	29	Yes	Yes	I	Gastric Ulcer	Relieved	18
21 R. T. J.	M	43	4.98	71	No	Yes	No	Marginal Ulcer	Relieved	6
22 E. E.	F	69	4.05; 2.61; 3.62	62	Yes	Yes	No	Duodenal Ulcer	Relieved	19
23 S. P. B.	M	49	4.28; 3.98; 4.39	78	Yes	Yes	No	Gastric Ulcer	Relieved	12
24 B. B.	M	44	1.79; 2.94	35	Yes	Yes	I	Duodenal Ulcer	Relieved	21

Analysis of the Chart

Three of the patients were treated twice for the same condition with intervals of complete recovery.

The drop in the red cell count occurred in the cases entering the hospital early; the initial count did not indicate accurately the total loss of blood. A red cell count was made before discharge to indicate the degree of improvement.

Seventeen of the 24 cases had hematemesis. All had melena. In the 7 cases without hematemesis, either the patient had vomited blood on some previous occasion, or the lesion was located in the stomach or duodenum. In 6 of the cases the diagnosis was undetermined. In 2 cases of hypertension the bleeding point could not be demonstrated by x-ray. Diagnoses of marginal ulcer were entirely presumptive; in each case the patient had had a gastro-enterostomy at some previous time. These doubtful diagnoses are not so significant, however, since the discussion concerns the treatment of gastric hemorrhage.

Transfusions were given to 12 patients to combat actual or impending shock. Two cases received transfusions before being put on the ambulance to be sent to the hospital. There was apparently no recurrence of hemorrhage in any patient of this series during the treatment.

Of the 2 patients that died, one was 78 years of age, and one was thought to have a hemorrhage secondary to alcoholic hepatitis complicated by syphilis.

The Control of Gastric Acidity in the Treatment of Ulcers.—One still attempts to keep the gastric acidity under control, but not necessarily neutralized. This is accomplished by frequent feedings rather than by alkalis. Nothing can be done about hereditary or constitutional factors, but much emphasis is placed on keeping the patient at ease, avoiding physical and nervous strains, rearranging the social environment, and providing for good nutrition, the careful mastication of food and the avoidance of foods and drinks that are mechanically or chemically irritating.—T. Grier Miller: *The Management of the Complications of Peptic Ulcer*, New England J. Med. 224:401 (March 6) 1941.

Competition.—Competition between and among medical men is the very essence of promoting and maintaining a high type of medical service. If a physician is not well trained, if he does not continue to keep abreast of new and better methods of diagnosis and treatment, if he is not continually working, reading and studying the methods of other medical men in other clinics, he soon loses his patients, his practice and his living to his competitors who do all these things and consequently render superior medical service. The public soon finds out about a doctor's results in his work. His every failure is advertised by an invisible but by no means ineffectual telegraph system. And when it comes to the matter of choosing a physician, most individuals are desirous of having first-rate attention, not second or third rate. In socialized systems, that competition between medical men is largely lost. The physician has no particular competitive impetus to either improve himself or the character of his work. He gets paid anyhow and beyond certain modest limits cannot increase his income no matter how hard he works, no matter how much he knows. If he has a pull with the higher administrative officers that, in and of itself, is of more value than the particular type of service that he may be rendering.—A. C. Callister: *The Medical Profession's Ideals in Medical Service*, Rocky Mountain M. J. 38:111 (February) 1941.

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THE STATE SOCIETY MEETING

The eighty-eighth annual meeting of the Medical Society of the State of North Carolina was held at Pinehurst, May 19-21. While the attendance was not quite up to last year's record enrollment, it was above the average of the past few years, and the papers read both in the general sessions and in the section meetings were of a high order. The proceedings will be published in a future issue of the NORTH CAROLINA MEDICAL JOURNAL, and only a few impressions will be given here.

As was to be expected, the retiring president, Dr. Hubert Haywood, completed his administration with noteworthy addresses to the House of Delegates and to the first General Session. The latter, which appears as the leading article in this issue, was highly complimented by Dr. Frank Lahey, President-Elect (now President) of the American Medical Association. Dr. Lahey's address, which followed Dr. Haywood's, will long be remembered by those who heard it. It will probably appear in next month's issue of this journal; but unfortunately some of the best

things he said were spoken "off the record". In addition to being one of this country's truly great surgeons and teachers, Dr. Lahey is also one of its most attractive speakers.

For the first time, the House of Delegates had its first meeting Monday afternoon, as recommended by Dr. Tom Long last year. A few pessimists predicted that there would not be a quorum present—but a large proportion of the delegates were on time. The extra time permitted for the various reports, resolutions, recommendations, and other items of business that had to be considered served such a useful purpose that this innovation will probably be made permanent.

The absence of the beloved Tom Long was felt by all, and, together with the dreary situation of the world, had a sobering influence upon the gathering. Dr. Manning, with Miss Margaret Long's capable assistance, had the secretary's affairs in excellent order. The heartiest vote cast by the House was in support of a resolution to recommend to the Trustees of the Hospital Saving Association that they take such steps as are necessary to make Dr. Manning Medical Director of the Association, "at a salary commensurate with the responsibility entailed." It was felt that, after Dr. Manning had nurtured the Hospital Saving Association through a trying infancy to a membership of nearly 150,000, without any financial reward whatever, it was really belated justice to recognize the scriptural principle that "the laborer is worthy of his hire." With the addition of the surgical and obstetrical insurance feature, Dr. Manning will have a whole time job; and there is no man in the state so capable of handling it as he.

Perhaps the most important action taken by the House was to authorize the Hospital Saving Association to add surgery and obstetrics to its insurance contract. A few years ago this would have been considered radical; but many state and county medical societies have gone even further to meet the clamor for prepaid medical services, and to forestall, if possible, compulsory sickness insurance under political control.

Dr. Donnell Cobb, of Goldsboro, was made President-Elect. Those who know him—and what doctor does not?—know how well fitted he is for this position.

Dr. Roscoe D. McMillan, of Red Springs, was elected Secretary and Treasurer. His

energy, ability, and personality should well qualify him for this most important post. He has the Scotch conscientiousness that makes him do his best in anything he undertakes. His recent remarkably successful record as District Governor of Rotary shows that he is a good organizer. To him, to President Webb Griffith, and to the entire administration of the Society, the NORTH CAROLINA MEDICAL JOURNAL pledges its heartiest cooperation. The inaugural address of Dr. Griffith is carried in this issue, together with a statement from our new Secretary, Dr. McMillan. Both are well worth reading.

* * *

SERUM VERSUS CHEMOTHERAPY IN PNEUMOCOCCUS INFECTIONS

Bellevue Hospital, in New York City, has a service devoted to the study of pneumonia, and from this department many valuable studies have appeared. The most recent contribution of these special workers throws a much needed light upon the relative importance of serum therapy and chemotherapy in the treatment of pneumonia⁽¹⁾. Their results are somewhat iconoclastic, and, of course, require verification, but it appears from their study that the mortality rate in 306 patients, treated with chemotherapy alone, was somewhat better than in 301 patients treated with chemotherapy, plus specific sera.

Should these results receive widespread verification, as seems probable from the unimpeachable character of the testimony, a great advance will have been made in the therapy of pneumonia. Serum treatment is complicated and expensive and, though one may regret the abandonment of a method which has cost so much in both labor and money, yet no one will forget the pioneer workers, especially Dr. Rufus Cole and his colleagues at the Rockefeller Hospital, who first elucidated so brilliantly the pneumonia problem. Their studies aid us in the appreciation of what is perhaps the most spectacular and fruitful therapeutic advance in the history of medicine, and, while rejoicing in the new, let us remember the old with gratitude.

1. Plummer, et al.: Chemotherapy Versus Combined Chemotherapy and Serum, J. A. M. A. 116:2366 (May), 1941.

THE A. M. A. VERDICT AND THE NATIONAL PHYSICIANS' COMMITTEE

The more one ponders the implications of the A. M. A. verdict, the more confused he becomes as to its effect on the private practice of medicine in the United States. The verdict was apparently received with indifference by the public generally. Most of the newspaper editorial comment was favorable to the medical profession; but the world situation has so overshadowed every other issue that the trial had little news value. Two things are certain, however: one, that the case will be appealed by the American Medical Association; the other, that the verdict will be used by the advocates of political medicine to argue that the people want prepaid medical insurance. The final decision, of course, will probably be rendered by the Supreme Court; and that body is now so thoroughly New Dealized that we can expect little from that source.

The most important body to appeal to is the intelligent members of the general public. If we can only get the real facts before them, we need not fear the outcome. We doctors have at least two ways of getting our cause before the public. One is by the personal touch—using our natural approach to our individual patients and their families. The other is through the National Physicians' Committee, which is using the power of the radio and the press to appeal to the public.

A recent public utterance should make us realize the necessity for action. In a public forum a law professor who was associated with Thurman Arnold in preparing the indictment of the A. M. A., gloating over the verdict, said that the American Medical Association was ruled by Morris Fishbein; that the true leaders of the profession favored socialized medicine. Such statements broadcast by men connected with the Government should be refuted.

Dr. Frank Lahey said at Pinehurst last week that the American Medical Association would be really appreciated only after it was destroyed. God forbid that this should ever come to pass! Let us back up the National Physicians' Committee with our moral and material support. A check sent to the National Physicians' Committee, Pittsfield Building, Chicago, Illinois, is the most tangible expression of one's disapproval of medical regimentation by politicians.

THE EARLY RECOGNITION OF CORONARY HEART DISEASE

THE STORY OF CLINICAL PULMONARY TUBERCULOSIS, by the late Dr. Lawrason Brown, tells the fascinating story of the developments that have come in the diagnosis and treatment of tuberculosis. It is interesting to note that no real progress was made in the control of the great white plague until clinicians learned how to recognize it in its incipency. Laennec immortalized himself by inventing the stethoscope and then using it to recognize the physical signs of tuberculosis; but he himself was a victim of the disease before he learned to recognize early forms of it. The great French clinician, P. C. A. Louis, took up the torch from Laennec and carried it on to the triumph of early recognition and treatment of tuberculosis.

Is it possible that treatment of coronary disease now parallels that of pulmonary tuberculosis a century ago? It is very seldom recognized, or even suspected, until it has reached a late, if not a terminal stage. Then the victim is put to bed for two months or longer, if he survives the first shock. Is it too much to hope that, with further clinical observation by men as keen as Laennec and Louis, earlier diagnoses may be made by clinical means alone? Remembering the part the x-ray has played in picking up a certain number of cases with no physical signs whatever, dare we not hope that with further refinements in the electrocardiograph, and with increased experience in the interpretation of its tracings, potential victims of this modern great plague may be identified in time to stay its progress? Is it not possible that, just as rest proved to be the greatest single therapeutic measure in dealing with lung disease, so it may also be found effective in the early treatment of coronary heart disease? If eight weeks in bed will restore many men to health sufficient for them to carry on their work for months, years, or even decades after the disease has progressed to the point of definite occlusion of a coronary vessel, should not a shorter rest period earlier in its course be infinitely more effective?

These questions are all unanswerable just now; but at least they are worth pondering. It will be argued at once that heredity is the greatest factor in coronary heart disease; but for centuries the same thing was said of consumption.

DR. CHARLES JOSEPH WHALEN

State medical journalism suffered a great loss when Dr. Charles J. Whalen, of Chicago, died on April 7, 1941. In 1913-14 he was President of the Illinois Medical Society. For twenty-two years he served as editor of the *Illinois Medical Journal*; for nearly twenty-five years he was a delegate to the American Medical Association. In all these positions, and in others as well, Dr. Whalen served nobly the cause of organized medicine. His fearless pen made the *Illinois Medical Journal* one of the most influential of the state medical publications.

The following two paragraphs from an editorial tribute in the May number of the *Illinois Medical Journal* express the feeling of all who knew Dr. Whalen:

"His efforts for the interest of medicine were not restricted by state lines, but were for the entire nation. Many of his editorials were published in part or in their entirety by many journals throughout the country. For many years while he was endeavoring to warn this nation of encroaching dangers, many thought it was the cry of 'Wolf! Wolf!'. But recent developments prove unmistakably that Dr. Whalen, many years ago, could see the changing trends in this country which he believed would eventually affect the health of our people and lower the standards which medicine had been gradually building up through the past century."

"Physicians of Illinois and many throughout this country will long cherish the memory of Dr. Whalen whom they have all greeted so many times at meetings in Illinois and elsewhere. They will recall with pride that he has long been interested in promoting the best in medicine, and has invariably had in mind, the interests of both the laity and the medical profession in his many editorial comments. Our people will remember him because of his high and noble standards, his knowledge of the aims and needs of our profession, and his constant efforts to do his part in the march of medical progress. Always interested in research, and in experimental work in the laboratory to contribute further to the present day knowledge concerning disease, its cause and alleviation, his passing is not only a loss to Illinois, but to the nation."

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

Presentation of Case

Daisy M., a white female, 50 years of age, was first admitted to the medical service of the hospital December 3, 1939, having been sent in by the intern on the outside service to have fluid removed from her abdomen.

The patient stated that for many years she had had an abdominal mass which had not bothered her a great deal until about two years ago, when she first noticed that it was growing. During the past several months her abdomen had increased considerably in size and she had begun to have pain in each flank. She had no other complaints except rather stubborn constipation. Her digestion had been good. She had had no swelling of the ankles or shortness of breath until recently.

Her husband and all her children were well. There was no significant ancestral history. She had had no very serious illness previously.

Physical examination revealed a chronically ill 50 year old white female. Her skin had a dusty color. Her teeth were in poor repair. Her lungs expanded equally, but the expansion was limited. The breath sounds were clear and no rales were present. There was a very great amount of fluid in the abdomen—so much that no mass could be palpated. There was an ulcer over the lower third of the right tibia. The axillary, epitrochlear, popliteal, femoral and inguinal lymph nodes were palpable and shotty. Her blood pressure was 140 systolic and 80 diastolic. Soon after admission abdominal paracentesis was done and very bloody, free-running fluid was obtained. After a basin full (2400 cc.) of fluid had been removed the pulse rose from 84 to 108, the patient became faint, and the withdrawal of fluid was stopped. Two days later 3,000 cc. of fluid, having the appearance of sherry wine, was withdrawn. The patient felt much better afterward, and was relieved of her pain. A hard, nodular mass was now palpable in the right flank and the right lower quadrant, separate from the liver. Sixteen days later

not much fluid had accumulated and the mass was still palpable. No nodules were felt in the liver. The patient was discharged on December 31, 1939.

Laboratory work on this first admission showed 2,800,000 red cells, 9 Gm. of hemoglobin, and a normal white and differential count. A smear made from the first specimen of abdominal fluid showed chiefly red cells, with occasional leukocytes. A differential count of the leukocytes revealed 60 per cent polymorphonuclears and 40 per cent lymphocytes. The specific gravity was 1.046. The urine was yellow, turbid and acid, with a specific gravity of 1.024, a 3 plus reaction for albumin, numerous white cells, and 10 to 12 red cells per high power field. The Kline test was negative. The blood nonprotein nitrogen was 37.5 mg. per 100 cc., and the blood sugar was 111 mg. per 100 cc. Culture of the abdominal fluid was negative. Examination of the fluid for tumor cells resulted in the following report: "Tumor cells present. Examination for tumor cells in fluid is not reliable and the report should always be interpreted in the light of clinical findings." During her stay in the hospital the patient's pulse ranged between 95 and 120 and her temperature between 99 and 100 F., gradually becoming normal after the first week.

The second admission was on April 9, 1940. Since her discharge from the hospital she had gotten along fairly well, except that the fluid had gradually accumulated again, causing dyspnea. She was readmitted for paracentesis. The physical findings were essentially the same as before. The abdomen was markedly distended with fluid and no masses were palpable. The superficial lymph nodes were noted as being enlarged, and having a shotty feel. On the day of admission 3,500 cc. of brown fluid which smelled like blood was removed. The patient felt much better. By ballottement a large smooth mass could be felt in the right lower quadrant. Four days later, 3,200 cc. of thick chocolate colored fluid was removed, revealing a very hard mass in the right lower and upper quadrants. On April 7, 7,800 cc. of dark brown fluid was removed. An inguinal lymph node was removed and diagnosed as "chronic lymphoid hyperplasia." Two specimens of fluid were examined for tumor cells. In one no tumor cells were reported; in the other tumor cells were reported to be present, with the caution

that this diagnosis should be taken with a grain of salt. X-rays were made of the chest and the long bones. They showed no evidence of metastatic tumor. A barium enema showed extrinsic narrowing at the rectosigmoid junction. The laboratory findings on the second admission showed 3,370,000 red cells, $11\frac{1}{2}$ Gm. of hemoglobin, and a normal differential count. The albumin had disappeared from the urine and there were only 8 to 10 white cells per high power field. The blood nonprotein nitrogen was 26 mg. per 100 cc. Before the patient left the hospital, not quite a month later, her red cell count had increased to 4,460,000, and she had 15 Gm. of hemoglobin. She had no fever during the hospital stay.

The third admission was on December 30, 1940. Another paracentesis was done and creamy yellow fluid was obtained. Her leukocyte count showed 15,600 cells, with 5 per cent juveniles, 26 per cent stabs, 63 per cent segmented cells, and 7 per cent lymphocytes. The hemoglobin was $7\frac{1}{2}$ Gm. No red cell count was done. The urine was negative. She had no fever. Her pulse varied between 90 and 100. She was discharged on January 1, 1941.

The fourth and last admission was on February 15, 1941. Until two days before admission there had been gradual increase in the size of the abdomen, but two days prior to admission the ascites increased suddenly and to tremendous proportions. Examination of the lungs revealed mucous rales. The heart was deviated to the left, and there was a systolic blow over the valve areas. There was marked tachycardia, and the radial pulse was barely perceptible. After 15 liters of fluid was removed a mass could be felt in the lower abdomen. The intern who withdrew the fluid felt that he had left at least an equal amount in the abdominal cavity. The liver could not be felt because of the tightness of the abdominal wall. The veins of the abdominal wall were markedly enlarged. There was a generalized edema and the skin was brown. By February 17 the patient had again accumulated a large amount of fluid, and 5 liters were removed. The patient was in very poor condition from the time of admission. Urinalysis was negative. There were 3,262,000 red cells and 9 Gm. of hemoglobin. The white cell count was 31,500 with 2 per cent juveniles, 36 per cent stabs, 48 per cent segmented cells, and 14 per cent lymphocytes.

The pulse varied from 100 to 150, and the temperature was subnormal. The respirations varied from 18 to 24, dropping to 10 just before death on February 19, 1941.

Discussion

DR. A. DET. VALK: This is a very interesting case—interesting because of the large amount of fluid obtained, and the variety of colors presented. I think the thing to consider first would be the fluid in the abdominal cavity. From the clinical findings we would rule out any cardiac or renal condition. The possibility of cirrhosis or carcinoma of the liver could be ruled out from the fact that she had no jaundice. I do not know if patients with cirrhosis would survive that long or not; patients with carcinoma would not. The possibility of some type of peritonitis, possibly tuberculous or carcinomatous from implantations or metastases from some other point in the peritoneal cavity, is to be considered. We can rule out tuberculous peritonitis on the basis of the prolonged course. The large amount of fluid present may indicate that she had some glandular involvement or a carcinomatous mass that would press on the inferior vena cava. She did not have any edema of the lower extremities until the very late stages. The mass in the lower quadrant and the right flank immediately brings to mind the possibility of a carcinoma. Apparently she had had no symptoms of obstruction, a fact which indicates that there was no involvement of the intestinal tract. One x-ray picture showed pressure at the rectosigmoid junction, which was probably from without rather than from within the bowel. Such a mass as is described here, with the symptoms presented, would, I think, be of pelvic origin, and probably of ovarian origin. You do get a certain amount of ascites with fibromyomatous conditions of the ovary, but not to this extent. I believe that the tumor mass, perhaps benign initially, arose from the ovary, with a subsequent malignant change developing. Whether it was the type of tumor in which peritoneal implantations with production of fluid occur is the question; however, I think that in the last stages she unquestionably had a carcinoma of the ovary. I am inclined to think that this fluid was within the confines of an ovarian cyst, and, in view of the rapid regeneration, to believe that the cyst was being tapped rather than the abdominal cavity. I base that be-

lief on the varying color of the fluid. The fact that the mass was restricted to the right side leads me to believe that it was of left ovarian origin. My diagnosis is a malignant type of ovarian cyst rather than free fluid in the peritoneal cavity.

DR. J. F. MARSHALL: Is there any notation of a pelvic examination? Was she in the hospital all that time with a mass in the right lower quadrant, without a pelvic examination?

DR. T. T. FROST: There is no notation of a pelvic examination on any of the four charts.

DR. A. DET. VALK: Was there any surgical consultation?

DR. T. T. FROST: There is one consultation by the surgical service for the removal of the lymph node.

DR. W. L. GRIMES: How do you explain the deviation of the heart to the left?

DR. A. DET. VALK: That is due to the large amount of fluid in the abdomen, which elevated the diaphragm.

Clinical Diagnosis

Carcinoma of ovary (?) with metastases.

Dr. Valk's Diagnosis

Malignant ovarian cyst.

Anatomical Diagnosis

Pseudomucinous ovarian cyst—infected.
Generalized peritonitis.

DR. T. T. FROST: At autopsy we found 6 liters of cloudy purulent fluid in the abdomen and a thick fibrinous exudate over all the peritoneal surfaces. The right tube and ovary were normal. The left tube was stretched over a large rounded mass which weighed 19½ pounds. This was attached at the site of the left ovary by a pedicle 2 cm. in thickness in one dimension and 1 cm. in the other. There were several small fibrous adhesions to the right parietal peritoneum. The lower portion of the mass filled the pelvis, but was not adherent to it. The remainder projected into the peritoneal cavity and was fairly movable. On section this mass presented one large cavity which contained purulent exudate. The inner surface was covered by a fibrinous exudate. The wall averaged about 6 mm. in thickness and was composed chiefly of fibrous tissue. The lining of the cyst had been destroyed by the inflammatory reaction, but it was probably a pseudomucinous cystadenoma, as this type

is more often unilocular. It is quite obvious that the cyst must have been punctured at least once, if not more times, and that the infection of both the cyst and the peritoneal cavity is the result of puncturing the abdomen. This case bears out my feeling that an abdominal paracentesis should only be done in the operating room where it can be immediately followed by a surgical procedure unless the possibility of an ovarian cyst can be completely ruled out beforehand.

CLINICO-PATHOLOGICAL CONFERENCE

Duke University School of Medicine

DAVID T. SMITH, M. D., and

ROGER D. BAKER, M. D.

A 26 year old white woman, Para IV (one abortion, three children living) was admitted with the chief complaint of chills and fever of five weeks' duration.

The present illness was preceded by a normal pregnancy of eight months' duration, and the labor was normal except for some excessive bleeding before delivery. Two days postpartum the patient first experienced a hard shaking chill, followed by high fever. One week later she was taken to a local hospital, where she was given sulfanilamide by mouth until she could no longer tolerate this drug, and she was then started on neoprontosil intramuscularly. In this same hospital she was given three blood transfusions. Five days following the twelfth intramuscular injection of neoprontosil she became jaundiced. Two blood cultures at this hospital were reported negative. Throughout her entire course she continued to have chills and high fever, but she had no unusual gastro-intestinal or urinary symptoms. She had no pain until three days prior to admission, when she developed rather severe soreness and tenderness in the region of her spleen. The patient continued to have a slight dry hacking cough without pain, sputum or hemoptysis.

The temperature on admission was 39.4 C.; the pulse was 110; respirations, 40, and blood pressure 90 systolic, 44 diastolic. This acutely ill and toxic white woman of 26 was well developed and fairly well nourished. The skin was pale with an icteric tint. No exanthem, petechiae, eruptions, or rash were noted. There was no generalized or localized

glandular enlargement. The mucous membranes were pale, and the scleras appeared yellow. The mouth was dry and the lips were scaly. The tongue was coated and dry. Examination of the lungs revealed expansion equal bilaterally, respirations rapid and shallow, tactile fremitus equal, percussion note resonant throughout and breath sounds vesicular except for one small area where moist rales were heard, just inside the right scapula posteriorly. The heart was normal in size, shape and position, with the maximum impulse in the fifth interspace. There was a diffuse impulse felt over the entire precordium, but more strongly over the pulmonic and apical areas. The rate was rapid, the rhythm regular, and a soft systolic murmur was heard to the left of the sternum, accompanied by a loud, snapping pulmonic second sound. The sounds to the left of the sternum were tambour in quality. The abdomen was flat and soft and not tender except for a very painful area just below the lateral portion of the left costal margin. The spleen was palpable at this area. It was hard and extremely tender. The liver was not felt, and no other organs or palpable masses were noted. Examination of the extremities showed the left leg to be larger than the right, with pitting edema from the ankle to the hip. There was no tenderness or increased heat of the left leg, and no cyanosis or clubbing. There was no evidence of thrombosis of the palpable veins of the legs, left or right. The remainder of the physical examination was within normal limits.

Blood studies showed 1,920,000 red cells, with a color index of .92; the hemoglobin was 5.5 Gm. or 35 per cent; the hematocrit 17 per cent by volume; the mean corpuscular volume 88.5 cubic microns; and the mean corpuscular hemoglobin content, 28.6. There were 9320 white cells, with 90 per cent polymorphonuclears, 60 per cent segmenters, 28 per cent stabs, 2 per cent juveniles, 2 per cent large lymphocytes, and 8 per cent small lymphocytes. Fresh and stained preparations were not remarkable. The sedimentation rate, corrected, was 20 mm. per hour. Blood Wassermann and Kahn reactions were negative. Stool and urine examinations were negative.

The patient was placed at bed rest on a high caloric full liquid diet with all accessory food factors added, and she was given additional supportive therapy in the form of multiple small blood transfusions, glucose in-

travenously and saline by infusion. Blood chemistry taken the day following admission showed a nonprotein nitrogen of 28 mg. per 100 cc., and no sulfanilamide; the spectroscopic examination was negative, and the serum van den Bergh direct reaction 3.5 mg. per 100 cc. Repeated blood cultures were negative. A bromsulfalein test showed 10 per cent retention. A second van den Bergh test made eight days after admission showed a direct reaction with 4.3 mg. per 100 cc. A bedside film of the chest showed a diffuse soft nodular infiltration throughout the lower two-thirds of both lung fields. In the right base there was considerable coalescence of the nodules. The heart appeared somewhat enlarged. We could not be sure whether this represented a pure bronchopneumonia or whether there was some pulmonary congestion. An electrocardiogram taken on the seventh hospital day was reported as normal.

In spite of rest, sedatives, diet and general supportive measures the patient's course was steadily downhill. There was a daily temperature elevation of over 40 C., the pulse ranged between 120 and 140, and the respirations between 30 and 48. She gradually became more jaundiced, and there was marked venous distention noted in the neck and in the superficial veins of the abdomen and thorax. There were increasingly frequent bouts of sharp pain in the chest, abdomen and arms, and narcotics were required for relief. Respirations became labored and difficult, the pulse and temperature continued to be high, the lungs became filled with rales, and the patient expired quietly on the thirteenth hospital day.

Discussion

DR. DAVID T. SMITH: This 26 year old white woman was apparently well until two days after the delivery of a normal child. Suddenly, without warning, she had a hard shaking chill, which was followed by high fever. She was evidently quite ill at this time, and was taken to a local hospital and given sulfanilamide by mouth for a period of days. The sulfanilamide was supplemented by neoprontosil intramuscularly. Five days after the twelfth intramuscular injection of neoprontosil she developed jaundice. This jaundice may have been due to a toxic effect of the neoprontosil, or it may have been due to the underlying disease process. Three days before admission to this hospital she developed soreness and tenderness in the region of the spleen.

The physical examination on admission showed jaundice, a few rales in the lungs, a large, tender spleen, a systolic murmur, a swollen left leg with pitting edema from the ankle to the hip. The right leg was found to be normal at this time.

The accessory clinical findings showed a severe anemia, with only 35 per cent hemoglobin and 1,920,000 red cells. The total white count was not much elevated, being only 9320, but the differential count showed marked evidence of infection, since there were 90 per cent polymorphonuclears and 28 per cent of these were stab forms. This evidence of infection is supported by the increased sedimentation rate of 20 mm. per hour. Her course was steadily downhill while in the hospital. The jaundice became more intense, the van den Bergh direct reaction increased from 3.5 mg. per 100 cc. to 4.3 mg. per 100 cc., pains developed in the chest, and the x-rays showed diffuse nodular infiltration throughout the lower two-thirds of both lungs. It was impossible to tell from the x-ray film whether this represented bronchial pneumonia, pulmonary congestion, or infarcts. She grew gradually weaker with the increasing evidence of pulmonary involvement, her respirations became labored and difficult, the lungs became filled with rales, and she died thirteen days after admission.

The sudden onset of chills and fever two days postpartum indicates that the patient had a puerperal infection. This infection undoubtedly resulted in thrombosis of the pelvic veins, and small clots from these veins periodically invaded the blood stream, giving rise to the involvement of the spleen with infarcts, probably causing infection of the liver, and most likely producing multiple emboli at the bases of the lungs. The infection in the veins must have extended, involving first the left iliac vein and causing the edema and swelling of the left leg; later by propagation of the clots past the bifurcation of the inferior vena cava the circulation was largely cut off from the right leg as well. The evidence for a complete occlusion of the lower inferior vena cava is found not only in the swelling of the legs, but in the development of collateral circulation in the superficial veins in the abdomen which were connected with the dilated veins of the neck. The upper limit of the thrombosed area will have to be placed below the entrance of the renal veins, since the urine

remained remarkably free from abnormal elements.

It is not surprising that the blood cultures both originally and in this hospital were negative, since the infection probably spread by small infected emboli, and at no time was there a frank septicemia. The infection was probably not due to a beta hemolytic streptococcus, since this undoubtedly would have been controlled by the early and prompt use of sulfanilamide. One would expect anaerobic bacteria which do not respond to sulfanilamide, or possibly a staphylococcus infection. Now that we have sulfathiazole available, it would be advisable to change from sulfanilamide to sulfathiazole in cases of this type if the patient does not make prompt improvement with the sulfanilamide.

Clinical Diagnosis

1. Puerperal infection.
2. Thrombosis of the pelvic veins.
3. Thrombosis of the iliac veins and inferior vena cava.
4. Splenic infarcts with abscess formation.
5. Pulmonary infarcts with abscess formation.
6. Probably multiple abscesses in the liver rather than toxic hepatitis from sulfanilamide.

Pathological Discussion

DR. ROGER D. BAKER: The autopsy indicates that there was a postpartum infection. The evidence for this lies in the finding of extensive thromboses in the veins within the substance of the uterus and in the broad ligament. A paravaginal abscess is also present not far from the cervix of the uterus. The original infection was probably either in the endometrium of the uterus or lower down where the paravaginal abscess is now found. The latter process could have originated in a tear of the cervix. The histological reaction in these regions is all quite old, with organization of the process. The uterine system of veins on the right side, both iliac veins, and the lower portion of the inferior vena cava are thrombosed. A mural thrombus lies in the last mentioned vessel and does not occlude the lumen entirely, but extends to a level just below the entrance of the renal veins.

There is no endocarditis, but there are multiple abscesses in both lungs. Small ab-

scesses are noted in the spleen, myocardium, and brain. Bacteriological studies were not carried out on the autopsy material, but sections of the abscesses stained for bacteria show exceedingly minute gram-negative cocci. These occur in great masses in the edges of the abscesses of the spleen and elsewhere.

The toxic effects of the infection are indicated by the enlargement of the spleen, which is a typical acute splenic tumor, and probably also by the enlargement of the liver, which was considerably larger than normal. Microscopically the liver shows central necrosis. The jaundice and liver damage might, of course, have been due to the injections of neoprontosil. From a study of the liver it is impossible to say whether the drug, or the toxic effect of the infection, or the drug plus the toxic effect of the infection was responsible. No abscesses were found in the liver.

Anatomical Diagnosis

1. Postpartum pelvic infection with paravaginal abscess, and thrombosis of the veins of the uterus and pelvis.
2. Thrombosis of the common iliac veins, bilateral, and of the lower inferior vena cava.
3. Multiple abscesses of the lungs; abscesses of the spleen, myocardium and brain.
4. Serofibrinous pleurisy, bilateral.
5. Acute splenic tumor.
6. Jaundice; central necrosis of the liver.
7. Gram-negative cocci in the abscesses.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL. B.

Raleigh

Evidence: Nonexpert witness held competent to testify as to the causative factor in the production of death following accident.

The following case was an action for the wrongful death of the plaintiff's intestate, a lad of 14, who was seriously injured on December 1, 1939, while riding with his father and mother on a wagon, when the wagon was struck by an automobile driven by the defendant, who, it is alleged, was driving at an unlawful and negligent rate of speed. Death occurred on March 29, 1940. When the plaintiff—the administratrix and mother of the deceased—entered her evidence and rested her case the defendant moved to dismiss the action and for a judgment as in case of nonsuit. The motion was allowed, and from this judgment the plaintiff appealed assigning error.

The records show that the witness, mother of the deceased, during the trial in the Superior Court

was asked if she had an opinion satisfactory to herself as to what caused the death of her son, and if so, what it was. Objections to these questions were sustained, and this ruling was assigned as error by the appellant. It appears from the record that if the witness had been permitted to answer she would have stated that she had such an opinion, and that she believed that the death of her son "was caused from the injury received when the automobile collided with the wagon", following which she would have explained the child's condition in detail from the time of the injury until his death, giving not only his complaints but the physical signs as she was able to observe them.

The Supreme Court reversed the decision of the Superior Court, and held as follows: "Proof of the cause of death is not confined to expert opinion evidence, and the testimony is sufficient to be submitted to the jury upon the question of whether the injuries sustained by intestate in the accident caused his death."

In substantiation of the decision rendered by the Supreme Court the Justice referred to *American Jurisprudence*, volume 20, under the head of "Evidence," pages 719-720: "Nonexpert.—The opinions of lay or nonexpert witnesses who are familiar with a person whose physical condition is in question and have had opportunity for observing him are competent evidence on issues concerning the general health, strength, and the bodily vigor of such person, his feebleness or apparent illness, or changes in his apparent state of health or physical condition from one time to another. Lay witnesses have been permitted to testify that a person looked bad, that he looked feeble, that he was lame or could scarcely walk, that he appeared to be very sick, and that he was so ill as to be beyond asking anything or in a condition to know anything." From the above reference to *American Jurisprudence* we find that the nonexpert or lay witness is allowed to testify and that his evidence is receivable in a rather wide range of instances, in addition to the specific case under discussion.

It would be of interest to know just exactly why medical evidence was not introduced in order to show the causative factor in the production of death in this case, but the records are not clear as to his medical treatment. It is stated that he spent about one month in a hospital, and there is reference by the mother in her testimony to "the medicine prescribed by the doctor". There is a possibility of course that the medical evidence available was favorable to the defendant, and was used by him. In any event the Supreme Court was at least willing to accept nonexpert evidence to such an extent that it felt that this evidence should have been submitted to the jury; accordingly, the judgment of the Superior Court was reversed. (North Carolina Supreme Court, Book 219, p. 388).

As long as reliable mortality statistics for tuberculosis have been known, young women have always been more prone to die of tuberculosis than have their young brothers or older sisters. While the general death rate from tuberculosis has steadily fallen, the death rate among young women has also decreased, but at a slower rate. The fact remains that tuberculosis is prevalent enough, particularly among young women, to warrant, in the opinion of many authorities, a tuberculin test on all pregnant women. Treatment of tuberculosis has advanced so rapidly in recent years, that with early recognition of the condition in pregnancy, it is possible in many cases to bring the baby through safely with no danger to the mother. — National Council for Mothers and Babies.

BULLETIN BOARD

INAUGURAL ADDRESS

F. WEBB GRIFFITH, M. D.

Dr. Haywood and fellow members, I want to thank you from the bottom of my heart for this honor that you have bestowed upon me. I realize from the bottom of my heart how little I deserve it.

In these uncertain times it is foolish for us to predict what we are going to do during the coming year. I do hope, however, that we are going to be able to add to our membership. There are many doctors in North Carolina who do not belong to this Society, and I hope we can get them on our list. I trust that every county society and every district society will use every effort to get them in.

Our country is facing probably the greatest crisis in its history. Unless we make every effort to preserve that democracy which we love the future holds nothing for us. I therefore hope that this medical society and we ourselves will do everything we can to show that we are worthy of our names and of our traditions and that, as always in the past, we shall be found not wanting.

It shall be my pleasure this year to give my whole time to the service of the Medical Society of the State of North Carolina, and

if in any way the various county and district societies can be helped by me I hope you will give me the privilege of serving you.

I thank you.

Given before the Third General Session of the Medical Society of the State of North Carolina, Pinehurst, May 21, 1941.

SECRETARY'S MESSAGE

It is my first and most agreeable duty as Secretary and Treasurer of our Society to express to you my profound appreciation for the honor which you have conferred upon me.

You notice I say our Society—this means I am expecting every member to help me in my efforts to conduct the affairs of this office so that I may be able to justify the confidence you have placed in me.

We realize that greater things than ever before will be demanded of our organization in carrying out the program of organized medicine in these times which can be characterized as no less than one of the greatest emergencies the world has ever known.

The usefulness of any organization is measured by the objects which called it into existence and the manner in which these duties are performed.

I thank you for the honor you have done me and for this opportunity for service.

ROSCOE D. McMILLAN, M.D.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

At the meeting of the Association of American Physicians in Atlantic City May 6, 1941, Dr. Wm. deB. MacNider was awarded the Kober medal for the year 1940. This medal is awarded annually by the Association of American Physicians to one of its members for outstanding contributions in research. This is an outstanding honor for Dr. MacNider and for the state.

* * *

An extensive research program on hookworm and malaria is being carried on at the University of North Carolina at Chapel Hill as a cooperative project between the Department of Biological Chemistry of the School of Medicine and the School of Public Health, both organizations being a part of the University. This joint research is being directed by Dr. James C. Andrews of the School of Medicine and Dr. Harold W. Brown of the School of Public Health, and is aimed towards a solution of the problems encountered when hookworm and

malaria infections are present in the same patient. In such cases, the administration of quinine as a cure for the malaria may be ineffective and the efforts of Drs. Brown and Andrews and their staffs are being made in the hope of solving this difficulty. The research includes a careful study of the rates at which quinine is absorbed from the small intestine in normal persons and those with intestines damaged by hookworms.

These researchers are also investigating the fate of quinine in the body and are searching for new compounds similar to quinine which are effective in dealing with the malaria parasite. The search for such products is particularly pertinent now that the role of quinine in national defense is receiving so much attention, since they may prove to be far more effective and economical in the treatment of malaria than quinine itself.

This work has now been in progress for two years and several scientific papers have been published on the subject by both groups of workers. It is supported by a grant from the Samuel S. Fels Fund of Philadelphia, the directors of which have recently extended aid to the work for a further period of two years.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Dr. Carl V. Reynolds, State Health Officer for North Carolina, was elected vice-president of the State, Territorial and Provincial Health Authorities of North America, at their meeting in Washington. The newly-elected president is Dr. Frederick W. Jackson, of the Health Department of the Dominion of Canada and Deputy Minister of Health at Winnipeg, Manitoba. Dr. Albert J. Chesley, of St. Paul, State Health Officer for Minnesota, was re-elected secretary. The organization is composed of health authorities from the United States, its territorial possessions, and the provinces comprising Canada.

"Security for the civilian population in and around defense areas and how to secure it claimed the attention of those attending the Washington meeting," Dr. Reynolds said.

* * *

Since registration began in North Carolina in 1914, the State Board of Health has recorded 2,139,002 births, and 894,926 deaths. Of these deaths, 170,334, or 19 per cent of the total, occurred among children under a year old. If the infant mortality rate of 90.2, which prevailed when registration began, had been maintained through 1940, the total would have been 192,828. Last year, instead of 4,646 infant deaths, which was the lowest number on record, there would have been 7,312. Last year also witnessed the lowest infant mortality rate on record in North Carolina—56.3, as compared with 59.1 the previous year and 90.3 in 1914.

During the two years in which the United States was an active participant in the first World War—that is, 1917-1918—our infant mortality rate in North Carolina was 99.2 and 98, the highest on record. War brings disorganization; it takes from the field of practice some of our best physicians and nurses. This naturally increases the hazards of pregnancy, childbirth and early infancy.

* * *

In his annual report before the conjoint session of the Medical Society of the State of North Carolina and the State Board of Health, Dr. Reynolds said:

"The Army and Navy, through the Selective Service Board, are taking 1,400,000 of our physically fit young men for mobilization purposes, but they are rejecting 40 per cent as unfit for military duty and 13 per cent as unfit physically.

"There has been a Health and Medical Committee set up by the Council of National Defense made up of members of the American Medical Association, Physicians of Medical Science of the National Research Council, the Surgeon General of the Army and Navy, and the United States Public Health Service, for the purpose of coordinating the health and medical programs."

"A really serious problem confronting us is around the Army and Navy bases during the construction period. At each base, so far in North Carolina—16,000, or more—think of it—proceed to these construction areas where there is no water, sewage or housing facilities, not even food, available. Such a situation is inconceivable unless you visit the area and see it first-hand.

"To correct this primitive, insanitary mode of living, is taxing the local and State Health authorities beyond their capacity; and it is, and has been, a Federal, State and local obligation to its citizens that has been sorely and woefully neglected."

* * *

Dr. Herman Siemens, of Alberta, and Dr. C. Doucet, of New Brunswick, have arrived in Raleigh, preparatory to spending the greater part of a month

in North Carolina, studying public health methods employed here.

Each of the visiting Canadians holds a position similar to those occupied by county health officers in this state. They are in this state under the sponsorship of the Rockefeller Foundation, and the first place they visited in North Carolina was the State Board of Health, in Raleigh.

Drs. Siemens and Doucet are holding extensive conferences with Dr. Fox, in order to familiarize themselves with work being done in the eighty-one counties and six cities in North Carolina which give full-time organized public health protection. Later, they plan to go on field trips and see, first-hand, some of the activities in progress.

"We came to North Carolina," Dr. Doucet said, "because this is looked upon as a model state in the field of public health. Our observations, so far, have borne out this conception of what you are doing in North Carolina. Moreover, we are particularly interested in public health activities in the United States at this time when we of the Dominion and you of this country have so many problems in common, in connection with preparations for the common defense of the Western Hemisphere."

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

Charlotte was chosen as the place for the next annual meeting of the North Carolina Tuberculosis Association. There were more than 150 people in attendance at the recent annual meeting of this association in Greensboro. The following officers were chosen for the ensuing year: Dr. C. W. Armstrong, Salisbury, President; Dr. William H. Smith, Goldsboro, Vice President; Dr. H. L. Brockmann, High Point, Secretary; Robert Brawley, Winston-Salem, Treasurer; Mrs. C. C. Hook, Charlotte, Honorary Vice President; Frank W. Webster, Executive Secretary. To serve with these on the Executive Committee the following were named: Mrs. Charles E. Platt, Charlotte; Dr. P. P. McCain, Sanatorium; and Dr. P. A. Yoder, Winston-Salem.

The following persons were chosen as members of the Board of Directors of the North Carolina Tuberculosis Association at its last annual meeting: Dr. Clyde A. Erwin, Superintendent of Public Instruction, Raleigh; Mrs. Marie B. Noell, Secretary North Carolina Nurses Association, Raleigh; Robert Brawley, lawyer, Winston-Salem; Mrs. Raymond Fuson, New Bern; Sanford Martin, Editor, Winston-Salem; Rev. Excell Rozelle, Gastonia; Mrs. Fred L. Williams, Fayetteville; A. N. Bernstein, Burlington; Mrs. Ralph Harbison, Morganton; Charles Cannon, Concord; Dr. David T. Smith, Duke University, Durham; Dr. Loren Wallin, Health Officer, Wadesboro; Dr. Borden Hooks, Tarboro, Dr. Ralph L. Fike, Wilson; and W. P. Gearing, Asheville.

There were already 28 persons on the Board of Directors at Large; adding the fifteen newly elected, this brings the number of the Board of Directors at Large of the North Carolina Tuberculosis Association to 43.

* * *

The following from the North Carolina Tuberculosis Association attended the annual meeting of the National Tuberculosis Association held in San Antonio, Texas, May 5-8: Dr. P. P. McCain, Sanatorium; Dr. David T. Smith, Duke University; Dr. S. M. Bittinger, Black Mountain; Dr. P. A. Yoder, Winston-Salem; Dr. M. D. Bonner, Jamestown; Frank W. Webster and Walter S. Page, of Winston-Salem.

Dr. McCain, the President of the National Tuberculosis Association, gave an address at the annual

dinner meeting and presided at the joint sessions of the Medical and Administrative groups.

* * *

The National Tuberculosis Association announces an Institute for Negro Tuberculosis Workers to be held under the auspices of the North Carolina College for Negroes at Durham, June 9-14.

The Institute is similar to the one held in New Orleans last year and is planned primarily to reach Negro leaders interested in tuberculosis or public health work, whether as physicians, nurses, social workers, administrators or volunteers. Dr. P. P. McCain, Superintendent of North Carolina Sanatorium, and Dr. Herman F. Eason, Chief Clinic Physician of North Carolina Sanatorium, will be members of the faculty from this state. Further information on this Institute can be secured from the North Carolina Tuberculosis Association, 406 Nissen Building, Winston-Salem, N. C.

EXAMINATIONS FOR APPOINTMENTS IN THE MEDICAL CORPS OF THE U. S. NAVY

The next examination for appointments as Assistant Surgeon, U. S. Navy, Lieutenant (junior grade), Medical Corps, U. S. Navy, will be held at all major Medical Department activities on August 11 to 15, inclusive. Applications for this examination must be in the Bureau of Medicine and Surgery not later than July 15.

An examination for appointment as Acting Assistant Surgeon for intern training in naval hospitals accredited for intern training by the council on Medical Education and Hospitals of the American Medical Association will be held at all major Medical Department activities on June 23 to 26, inclusive. Students in class "A" medical schools who will complete their medical education this year are eligible to apply for these appointments, and if successful will receive their appointments approximately after the date of the examinations. Students in Class "A" medical schools who will have completed their third year of medical education this year are eligible to take this examination, and if successful will receive their appointments on or about July 1, 1942, after they have completed their medical education.

Applicants for appointment as Assistant Surgeon or as Acting Assistant Surgeon for intern training must be citizens of the United States, more than 21 but less than 32 years of age at the time of acceptance of appointment. Applicants for appointment as Assistant Surgeon must be graduates of a class "A" medical school who have completed at least one year of intern training in a hospital accredited for intern training by the council on Medical Education and Hospitals of the American Medical Association. Acting Assistant Surgeons are appointed for a period of eighteen months. After the appointee has served as an intern in a naval hospital for twelve months, he is eligible for and may take the examination for appointment as Assistant Surgeon, U. S. Navy.

A circular of information listing physical and other requirements for appointment, subjects in which applicants are examined, application forms, etc., may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., upon request.

Assistant Surgeons and Acting Assistant Surgeons for intern training are appointed in the rank of Lieutenant (junior grade), Medical Corps, U. S. Navy. The pay and allowance for an officer of this rank total \$2699 per year if he has no dependents, and \$3158 per year if he is married or has dependents.

BUNCOMBE COUNTY MEDICAL SOCIETY

On May 5 the Executives' Club Dinner originally scheduled for March was held in the George Vanderbilt Hotel in Asheville. Dr. Morris Fishbein, Editor of the *Journal of the American Medical Association*, spoke on "Socialized Medicine".

GUILFORD COUNTY MEDICAL SOCIETY

The Guilford County Medical Society met at the King Cotton Hotel in Greensboro on May 1 at 6:30 p. m.

Dr. George Wilson of Philadelphia, Professor of Clinical Neurology at the University of Pennsylvania Medical School, spoke on "Acute Involvements of the Nervous System".

MECKLENBURG COUNTY MEDICAL SOCIETY

The Mecklenburg County Medical Society held only one meeting in May, because of the State Medical Society meeting at Pinehurst. On May 6 Dr. Wallace Bradford spoke on "Intravenous Ergotrate at the End of the Second Stage of Labor", and Dr. William R. Pitts spoke on "The Use of Subarachnoid Injection of Absolute Alcohol for the Control of Intractable Pain in Malignancy".

NEWS NOTES

Dr. Rush Shull of Charlotte has been appointed a Fellow in the American College of Radiology.

* * *

Dr. William Allan addressed the New York Medical and Eugenic Society at its recent meeting.

* * *

Dr. O. L. Miller of Charlotte spoke before the South Carolina State Medical Association on "Experiences With Complications in Fractures of the Elbow and Bones of the Forearm".

* * *

Dr. Alfred Blumberg of Asheville has been assigned to Station Hospital, Camp Shelby, Mississippi, with the rank of Major.

One Cause of Fatigue.—If the fatigue and loss of "pep" and interest in life come suddenly in a person past middle age, the cause is almost certainly a small stroke. Curiously, physicians rarely think of this possibility when the thrombosis does not happen to involve the centers for speech or for arm or leg. Commonly the episode is thought to be due to an "acute indigestion" because it is so often associated with dizziness and a storm running down the vagus nerves to produce vomiting and abdominal discomfort. Sometimes careful history taking will show that there were several of these small episodes. Often they come in the morning when the patient wakes. Especially after several of them there is likely to be some loss of memory, a loss of interest and zest in life, and perhaps an inability to work. Unfortunately, this sudden and marked change in the temperament of the patient is seldom mentioned when the victim and his family are in the physician's office. The story must be dug out. It is important that the physician recognize the true nature of these little upsets because then he will know that it is useless to try to help the patient or to cheer him up. His brain is injured and he cannot be helped.—Walter C. Alvarez: *What's Wrong With the Patient Who Is Always Tired?* Minnesota Medicine, 23:787 (November) 1940.

WOMAN'S AUXILIARY

OFFICERS 1941-42

President—Mrs. Sidney Smith, Raleigh
 President-Elect—Mrs. R. A. Moore, Winston-Salem
 First Vice President—Mrs. C. R. Hedrick, Lenoir
 Second Vice President—Mrs. J. R. Terry, Lexington
 Third Vice President—Mrs. J. S. Hooker, Chapel Hill
 Secretary—Mrs. Harry Winkler, Charlotte
 Treasurer—Mrs. E. C. Judd, Raleigh

NINETEENTH SESSION OF THE WOMAN'S AUXILIARY

The Nineteenth Session of the Woman's Auxiliary to the Medical Society of the State of North Carolina was held at Pinehurst, Tuesday, May 20, at the Carolina Hotel. The Hoke and Moore County doctors and their wives were hosts and hostesses to the Medical Society and the Woman's Auxiliary. Mrs. Clyde R. Hedrick of Lenoir, President of the Woman's Auxiliary, presided. Mrs. Hedrick expressed her appreciation to her co-workers who so faithfully have cooperated during her year of office. Mrs. Hedrick gave a complete report of the year's activities, stating that the McCain Bed at Sanatorium was being occupied by a member of the nursing profession, while the new Martin L. Stevens bed, at Black Mountain, was being occupied by a member of the medical profession. The student loan fund is being used by a future doctor. It is only through the cooperation of all the doctors' wives that we will be able to continue and increase the philanthropy of the Woman's Auxiliary to the Medical Society of the State of North Carolina.

Dr. Hubert B. Haywood, President of the Medical Society of the State of North Carolina, was guest speaker to the Auxiliary. Dr. Haywood expressed his appreciation and praise of the Woman's Auxiliary in this manner: "Your Students' Loan Fund, with its ideals of worthy philanthropy, could set no higher goal. Your endowment of beds in tubercular hospitals speaks for your kindness of heart and practical accomplishments. *Hygeia*, the only thoroughly authentic health magazine in the country, is so highly en-

dorsed by you, and your effort to put it in schools and public libraries is to be commended."

Dr. Haywood continued by saying, "The day is past when the greatest good can be achieved by individuals working alone. When the North Carolina Medical Society has had difficult objectives to attain, and has set its sight on well nigh unattainable goals, it has called upon the Woman's Auxiliary to be its lever and its prop. We will continue to need your assistance, as we are in an unsettled situation."

Mrs. C. F. Strosnider of Goldsboro, first vice president and chairman of organization, gave a fine report. Mrs. Strosnider expressed a wish that every doctor's wife in North Carolina would become a member of the Woman's Auxiliary.

Mrs. E. C. Judd, treasurer, gave a report showing how our dues work for us.

The chairman of the Committee on Research, Mrs. R. S. McGeachy of New Bern, gave a fine paper on the life of the late Dr. Martin L. Stevens, for whom the new bed which the Woman's Auxiliary will support at Black Mountain Sanatorium is named.

The chairman of the Obituary Committee, Mrs. I. H. Manning, read a beautiful memorial service in memory of our members who have passed on beyond during the year.

Delegates to the American Medical Association Convention to be held in Cleveland in June are Mrs. John Hamilton, Mrs. Harry Winkler, and Mrs. Clyde R. Hedrick.

The report of the Nomination Committee was as follows: Mrs. Sidney Smith, Raleigh, president; Mrs. R. A. Moore, Winston-Salem, president-elect; Mrs. C. R. Hedrick, Lenoir, first vice president; Mrs. J. R. Terry, Lexington, second vice president; Mrs. J. S. Hooker, Chapel Hill, third vice president; Mrs. Harry Winkler, Charlotte, corresponding secretary, recording secretary; and Mrs. E. C. Judd, Raleigh, treasurer. Appointed officers will be named later.

Mrs. P. P. McCain outlined the entertainments which had been arranged for our pleasure. Corsages in the form of exquisite orchids were presented by the hostess Auxiliaries to Mrs. Clyde R. Hedrick, president, and Mrs. Hubert Haywood, wife of the president of the Medical Society.

MRS. ALFRED A. KENT, JR.
*Chairman of Press and
 Publicity.*

In Memoriam

ALLAN CARITHERS BANNER, M.D.

Dr. Allan Carithers Banner was born in Mount Airy on January 12, 1896, and died at his home in Greensboro on January 11, 1941. His death resulted from an acute heart attack suffered a few hours earlier.

He attended Mount Airy high school and then entered the University of North Carolina, where he remained from 1914 until 1918. The last two years of this time were spent in studying medicine. He then transferred to the Jefferson Medical College in Philadelphia, where he graduated in 1920. His internship was served at King County Hospital in Brooklyn, N. Y., after which he specialized in diseases of the eye, ear, nose and throat. In 1922, he became associated with his uncle, Dr. Charles W. Banner, in Greensboro. He was a member of the West Market Street Methodist Church, where he served on the Board of Stewards. He was a member of the Greensboro Lions Club and the Country Club, a member and loyal supporter of the Guilford County Medical Society, the Medical Society of the State of North Carolina, and a Fellow of the American Medical Association and of the American College of Surgeons. Surviving are Mrs. Banner, the former Miss Marian Boren of Greensboro, a daughter, Jane, and a son, Allan, Jr. His father, John Banner of Mt. Airy, a half-sister and half-brother also survive.

In Allan Banner's death, Greensboro has lost one of her most valued citizens; the medical profession, one of its ablest members. He was indeed a physician in the truest sense, ready and willing at all times to give of his talent and knowledge to those who sought his aid. His thought always was service to others, and there is little doubt but that this in part contributed to his early and unfortunate passing when still in the prime of life.

To those who were privileged to know intimately this quiet and unassuming man, there was a feeling of genuine affection. He was one of the most modest of men and never pushed himself forward, but always was ready to assume with fidelity any trust imposed upon him.

His attitude toward his colleagues was indeed an inspiration; in his dealings with his fellow physicians he played the game fairly and squarely, and his motto could easily have been "He lives best who serves most." His code of life is symbolized very fittingly in Foss's immortal poem:

Let me live in my house by the side of the road
Where the races of men go by;
They are good they are bad, they are weak they
are strong,
Wise, foolish, so am I.
Then why should I sit in the scorners seat,
Or hurl the cynic's ban?
Let me live in my house by the side of the road,
And be a friend to man.

Submitted by

Oliver L. Sharp, M.D.
(For the Committee)

BOOK REVIEWS

The Story of Clinical Pulmonary Tuberculosis. By Lawrason Brown, M.D., Late Director of Trudeau Sanatorium; Lecturer in Trudeau School of Tuberculosis; Author of **Rules of Recovery from Tuberculosis**, etc. 411 pages. Price \$2.75. Baltimore: The Williams and Wilkins Company, 1941.

This book was compiled from notes left by one of America's ablest and best loved specialists in tuberculosis, supplemented by two additional chapters by Homer L. Sampson and Edward W. Archibald. It is just the sort of book that his friends and admirers would have expected from Dr. Brown: scholarly, scientifically accurate to the minutest detail, yet clearly phrased and of fascinating interest. The history of the great white plague is traced from the Indo-Aryans, (1500 B.C.) to the most modern refinements in its treatment. We are told that Hippocrates described succussion, pleural friction, and breath sounds like "boiling vinegar". Further progress, however, was retarded for fourteen centuries by the dead weight of Galen's authority. To Laennec—a consumptive himself—credit is given for really putting on a sound basis the clinical recognition of tuberculosis by auscultation through his own invention, the stethoscope. Laennec, however, failed to recognize the disease in its early stages. This remained for the great French clinician, P. C. A. Louis, to do.

At least three North Carolina doctors are mentioned in the list of those who contributed to the literature of tuberculosis; E. C. F. Strudwick, Charles L. Minor, and Paul H. Ringer.

Proctology for the General Practitioner. By Frederick C. Smith, M.D., M. Sc. (Med.), F.A.P.S. Formerly Associate in Proctology, Graduate School of Medicine, University of Pennsylvania; Editor, *The Medical World*. Second edition, revised. Price, \$4.50. Pp. 466. Philadelphia: F. A. Davis Company, 1941.

In this volume the entire field of proctology is intelligently covered. The more essential phases are treated in adequate detail, and ample consideration is given to every aspect of the subject. While written primarily for the general practitioner, this book should be a valuable asset to any internist's or general surgeon's library.

The Doctor Takes a Holiday. By Mary McKibben-Harper, M.D. An Autobiographical Fragment of 349 pages. The Torch Press, 1941.

Dr. Mary McKibben-Harper took a trip. She went where all tourists to the Orient go and saw what all tourists to the Orient see, except for visits to the local hospitals. From the pages not a single character emerges to be remembered—only places and things.

To all physicians many things become commonplace, but to lose all appreciation of people and of beauty is to lose also all power of happiness and all release from the woes and ills of the world. If you want a travelogue of what not to do and see in the Orient, read **The Doctor Takes a Holiday**.

New Discoveries in Biochemistry

Discoveries in the realm of biochemistry which point the way to new frontiers in the field of medicine were revealed recently by Dr. Thomas F. Anderson, RCA Fellow of the National Research Council. The methods used would be applicable in the study of such human ailments as smallpox, infantile paralysis, influenza, and the common cold. Dr. Anderson spoke before the Division of Biological Chemistry of the American Chemical Society at the Municipal Auditorium, St. Louis.

Dr. Anderson pointed out that scientists are now able to see the larger molecules under the powerful magnification of the new RCA Electron Microscope. In fact, he added, it is even possible to see reactions between individual molecules of different types.

Such reactions, he explained, are responsible for immunity to disease and even for the discomforts of ordinary allergies such as hay fever. Persons suffering from a disease develop in their blood streams substances called antibodies, which attack the disease agent, overcome the disease if the person recovers, and, in many cases, give the persons an immunity to the disease.

As a basis for their studies, Dr. Anderson and Dr. W. M. Stanley of the Rockefeller Institute at Princeton, produced in rabbits an artificial immunity to tobacco mosaic virus. They actually succeeded in photographing the virus which had been attacked by antibodies from the rabbits' blood serum. The photographs were so clear that the actual manner and extent of attack could be determined.

Dr. Anderson said that the techniques developed in these experiments are being used in the RCA Research Laboratories at Camden, N. J. as the basis for continuing studies of causal agents of human disease.

The tremendous resolving power of the RCA electron microscope, which is from 20 to 50 times more powerful than the best light microscopes, has made the experiments possible by revealing the appearance of large molecules, heretofore hidden beyond the reach of the best light microscope. The new instrument has even made possible the accurate determination of the size and shape of molecules which could only be determined before by involved and indirect procedures.

Dr. Anderson said that study of the tobacco mosaic virus under the electron microscope showed the particle to be rod-shaped, and about one-one hundred thousandth of an inch long. Measurement of the minute virus was made possible by the discoveries by Dr. Stanley of a way to separate the virus in purified form.

Exercise With Insulin.—Unusual exercise promotes the tendency to a reaction. With regular insulin or crystalline insulin one takes a little extra carbohydrate at the first sign of a reaction, but patients employing protamine zinc insulin will do better if they eat their extra quota of carbohydrate at the beginning of the exercise.—Elliott P. Joslin: Diabetic Hazards, New England J. Med. 224:590 (April 3) 1941.

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OBSTETRICS—Three Weeks Personal Course starting August 4th. Two Weeks Intensive Course starting October 6th. Informal Course every week.

OTO-LARYNGOLOGY—Two Weeks Intensive Course starting September 8th. Informal Course every week.

OPHTHALMOLOGY—Two Weeks Intensive Course starting September 22nd. Informal Course every week.

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PROGNOSIS IN PULMONARY TUBERCULOSIS

PAUL H. RINGER, M. D.

ASHEVILLE

The gift of prophecy has always been looked upon with awe and admiration. To the patient consulting a physician, prognosis is far more important than diagnosis. He is more interested in what is going to happen to him than he is in the name of the malady that has gripped him. Prognosis is a science, a logical process of deduction, and an art. From certain objective facts scientifically secured and scientifically interpreted, justifiable logical deductions can be made and the future course of the disease predicted. Over and above this, however, the art of medicine steps in and the physician will have to draw upon imponderables and intangibles and give them due weight in the making of his forecast.

This is not to be a statistical paper. It is practically impossible for an individual engaged wholly in private practice to compete statistically with the many large sanatoria scattered from coast to coast, and statistics are virtually worthless unless they embrace a very large number of patients whose post-sanatorium careers have been carefully followed over a long period of years. It is proposed to discuss here the various elements concerned in the making of a prognosis, their interdependence and relative importance, and to indicate how the physician can most accurately foretell the fate of the patient.

It is but necessary to state by way of completeness that youngsters, especially girls in their teens, offer as a rule a more serious prognosis than do their elders, and that the Jewish race is by far the most resistant to tuberculosis.

Duration of disease has naturally an important bearing on the outcome. If the

pathological process has lasted a long time, there may be extensive bilateral involvement with cavity formation, which will necessarily be a grave omen. On the other hand, disease of long duration may have been mainly of the proliferative variety, resulting in extensive fibrosis. This will offer a better prognosis for life, though a poor one from the standpoint of working efficiency. Further reference to this whole matter will be made when the nature of the lesion is considered in more detail.

Evidences of toxemia are of paramount importance in influencing prognosis, especially if these do not diminish or disappear under proper treatment. Of these the most important is unquestionably fever. No case can be said to be inactive as long as this symptom is present. Its gradual subsidence is of good augury; its persistence foretells evil. To be sure, fever may persist for months even under the best therapeutic regime, and one must not expect its disappearance after a few weeks of bed-rest. Its continued presence, however, means that the infection is not yielding to the elements of resistance. Were one forced to rely upon a single factor for prognostic determination (which, fortunately, is not the case), I think that fever would have to be the one selected. Anorexia and poor digestion are bad signs. In a disease in which the body tissues are being over-oxidized and in which, consequently, an overplus of food intake is essential, the patient's inability to ingest and digest this food must be considered a serious handicap. When to this is added inability to secure restful sleep save with the help of hypnotics, the situation becomes all the more serious. Racking cough, uninfluenced by

treatment, is serious. The basis of treatment is rest, and there are few more violent forms of exercise than constant coughing. Large amounts of positive sputum cannot be associated with improvement and are constantly a menace, as they may lead to the development of a tuberculous laryngitis or a tuberculous enteritis.

Persistently low blood pressure that does not rise when other symptoms seem to be improving is not a good sign. According to Kennedy⁽¹⁾, "Studies prove that for people with very similar blood-pressures, the percentage fall in systolic and diastolic pressures was definitely greater in those who were, or later did, poorly."

The nature of the lesion is unquestionably one of the most important factors upon which to base prognosis. Pottenger⁽²⁾ well says: "While the major pathological processes may be described as predominantly exudative and predominantly proliferative, the most serious phenomenon in the pathology of tuberculosis, the one which carries with it the possibility of affecting prognosis most unfavorably, is caseation and softening, because this process is responsible for cavity formation and furnishes the source of bacilli, which metastasize by spreading through such natural channels as the bronchi."

The patient with an acute tuberculous pneumonia has, of course, a very grave outlook; for if, as often happens, a very large amount of the exudate is absorbed, almost invariably a nidus of caseation will remain which will result in sloughing and cavity.

It must be borne in mind that almost all stages of tuberculous progress and involution are to be found in a given patient at one and the same time; that there will be present an exudative process, a proliferative process, a softening process, absorption of exudate, fibrosis; and that coincidentally there may be healing disease in one area and progressive disease in another. It must also be realized that no physician is skillful enough to be able to discover the site of all these varied synchronous processes by any known method of physical or x-ray examination.

Some can be demonstrated, but, I am sure, only a small proportion.

It is from the necropsy table that we have learned the simultaneously protean nature of the tuberculosis process. We know it is there; during life we cannot demonstrate it. Bearing all these facts in mind, aided by frequent physical examination and carefully interpreted serial x-ray films, we can get a panoramic picture of what is going on even though many of the details must elude us, and therefore we can reach a reasonably accurate conclusion of what the future holds in store. Let it be remembered that all said thus far is stated without reference to collapse therapy.

One of the best indices of decreasing infection or increasing resistance (use whichever term you will) is the blood sedimentation test. I have been using it for ten years and have come to place great faith in it, provided, of course, other concurrent infections can be ruled out. Unfortunately, the sedimentation test is not specific for toxins of the tubercle bacillus. A rise in the rate will often foretell a flare-up before fever or any other symptom appears. I have never known a patient with a falling rate to be doing badly. A very few (the exceptions to the rule) have done well and have recovered while always maintaining a high rate; but on the whole, this test, simple and fool-proof, is probably the most sensitive indicator that we possess of the advance or retreat of the bacillary hordes.

Thus far we have been dealing with objective phenomena. We must now consider a series of conditions more subtle and less tangible, which, however, have a very definite influence on prognosis.

The social condition, the intelligence and the temperament of the patient, all play important roles. The submerged tenth, unless adequate sanatorium treatment is promptly available, will usually lose the fight. In large metropolitan centers prompt hospitalization is usually possible. In rural states like North Carolina, with but one city of 100,000 inhabitants, accommodations are not so easy to secure, and it takes from two to three months to secure admission to our state sanatoria. Those in the higher economic brackets have a proportionately better chance. A certain amount of intelligence is necessary to recovery, and, therefore, influences prognosis. I use *intelligence* as differentiated from *literacy*. Many compara-

1. Kennedy, A. S.: The Prognostic Value of Renal Function Tests in Pulmonary Tuberculosis, *Canad. M. A. J.*, (February) 1933, p. 112.

2. Pottenger, F. M.: Prognosis in Tuberculosis, *Ann. Int. Med.* (September) 1937, p. 474.

tively illiterate people have a relatively high degree of intelligence. They must be able to understand the nature of their disease, to appreciate the importance of attention to detail in the conduct of treatment, to realize the necessity for self-discipline and sacrifice, and to be willing to give up adequate time to achieving recovery. As the late Dr. Lawrason Brown said: "No fool ever recovers."

Temperamentally, many people are totally unfit to be the victims of tuberculosis. Some are so panicky that they literally worry themselves to death and cannot take a normal view of anything. Some accept things in a dull, apathetic sort of way but never really try to know what it is all about. Some are over-confident and can never be persuaded that there is anything the matter with them; they trust neither physician nor nurse and when *they* think that they have taken the cure long enough, off they go. And, verily, they have their reward! Some are openly rebellious at the trick they feel Fate has played them, and, figuratively, beat their heads against the wall. It doesn't harm the wall, but it hurts the head!

Of course, these are the attitudes of aberrant patients and thereby their prognosis is enormously influenced. The type of patient whose temperament merits a good prognosis is one having a reasonable fear of his disease—not great enough to result in panic but sufficient to compel him to sacrifice everything to the business of getting well. He must possess a combination of resignation and fighting ability. He must accept unreluctantly the inevitable. He must swallow the bitter pill of months of incapacity and must accept this unwelcome inactivity with good grace. He must, on the other hand, have a fighting side. He must have the "will-to-win" and the determination that an added obstacle placed in his path is simply a further challenge which he must accept. It is a gauntlet thrown down which he must pick up. Such a patient stands a good chance of recovery. It may be added that by his sympathetic interest and by his attention to the details, not only of treatment but also to those psychic and domestic problems which so often beset the tuberculous patient, the conscientious and earnest physician can do much to change a faulty philosophy of life into one which will be of the greatest benefit in furthering recovery and thus materially influence prognosis.

All that has been said thus far has left

out of consideration that greatest boon of modern medicine to the moderately and far-advanced case of tuberculosis—collapse therapy. This form of treatment has vastly changed the prognosis for life—although not so much for efficiency, as I will try to show.

Prior to collapse therapy bed-rest was all that could be offered the tuberculous patient with or without a pulmonary cavity. Certainly marvelous results were, and still are, obtained by patient, long-continued bed-rest; but statistics show that, with this treatment alone, about 90 per cent of cavity cases are dead at the end of five years. Despite the best of attention and cooperation, something always happens—a hemorrhage with post-hemorrhagic metastasis, a bronchogenic spread, a tuberculous enteritis, a meningitis or some other complication. With the advent of pneumothorax, physiological rest was added to merely physical rest, cavities were closed and were kept closed, and recovery ensued. In those cases where adhesions prevented a partial pneumothorax from becoming total, the Jacobaeus operation of internal pneumonolysis, so well developed in this country by Dr. Ralph Matson of Portland, Oregon, enabled 72 per cent of partial pneumothoraxes to be transformed into total ones. When pneumothorax failed, partial or total extrapleural thoracoplasty was employed; latterly extrapleural pneumothorax, the pad or plumbage operation, and many others have been used to a greater or lesser extent. But this is not to be a dissertation on collapse therapy; the various methods employed to collapse the lung are mentioned only that it may be realized what strides have been made in keeping the diseased organ at physiological rest and in overcoming that *bête noire* of tuberculosis—the cavity. By the same token, the prognosis of moderately and far-advanced cases has changed enormously; in past years almost utterly hopeless, they now have a good chance for recovery, provided they are fortunate enough to fall into the hands of a first-class thoracic surgeon and provided their disease has not progressed too far bilaterally. Thus many doomed to death in the past have been and are being saved.

Of course, collapse therapy has been run into the ground. Credit is given to collapse measures in many instances in which the lesions would probably have healed under hygienic measures alone. The use of pneumothorax in those early cases in which the patient is really able to make his own com-

pensation adds to the prestige of that type of therapy, when, in reality, a similar result could have been obtained without it. The effect is to brand the prognosis in most cases of tuberculosis as unfavorable unless collapse therapy is used. Prognosis has a right to be, in a measure, based on treatment; but, in my opinion, it is not warranted to collapse early lesions without cavity formation.

A few words are necessary concerning prognosis for economic recovery. As an example: A stevedore or a baggage man at the railway station develops tuberculosis. Pneumothorax is tried and fails. His lesions being essentially fibrotic, his general condition being good and his vital capacity not seriously impaired, with heart and circulation satisfactory, he is subjected to a thoracoplasty. He recovers, and is free of bacillary sputum, fever and cough. In short, his disease has been brought to a standstill. Can he now resume his work? By no means, nor will he ever be able to take up his former calling. Being in most instances a man of limited intelligence and capacity, he knows not where to turn, and his disability is just as great with his disease arrested as it was when it was active. It is in such cases that the rehabilitation program sponsored by the National Tuberculosis Association and by many state tuberculosis associations proves of greatest value.

It must be realized that the wide use of surgery in the treatment of tuberculosis results often in clinical arrest of disease, but also in a permanent crippling of the patient, through no fault of the surgeon, but because of the pre-operative toll taken by the duration of the illness and the extent of involvement and because of the mechanical insult necessitated by the operation, which alone could snuff out the disease process and prolong life. Therefore, in making prognosis, it is necessary to consider two elements: first, prognosis as to life; and second, prognosis as to a return to working efficiency. In many instances, from the practical standpoint, the second is quite as important as the first. Helping hands are being held out to the unfortunate individual who, having had his life saved, is forced to turn from loading cases of goods on shipboard to weaving baskets in his two-room apartment. Many more helping hands are still needed, for the skill of the surgeon is saving hundreds who will become public charges unless their future occupational life can be properly

adjusted. It is a large problem and one in which treatment is fast outstripping working rehabilitation.

This discussion of prognosis has been, perhaps, a bit haphazard, and has, I realize, but touched the high spots. I hope, however, that I have been able to show how many facets this prognostic stone possesses, how important they all are, how much they must be considered by the physician whose responsibility it is to make the forecast, and how intensely important the verdict is to the suffering man or woman who relies on medical knowledge, judgment and acumen to tell him or her what is ahead. Prognosis is a fascinating process. In probably no other medical activity does individualism count so much. Possibly nowhere in medical practice does experience count for more. Perhaps never will prognosis become an exact science, and therein lies its lure and its charm. Certainly to no branch of the healing art is the old Hippocratic aphorism more applicable:

"Life is short and the art long,
The occasion fleeting,
Experience fallacious,
And judgment difficult."

SOME ASPECTS OF ACUTE CORONARY OCCLUSION, WITH REPORT OF CASES

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The purpose of this paper is twofold: First, to direct the physician's attention to the possibility of diagnosing coronary artery disease from the history and physical examination of the patient, and to a realization that some people spend a lifetime weaving the pattern leading to this fatal development; second, to report a group of 22 cases that illustrate almost every symptom, diagnostic sign, and complication that are reported in the literature to date⁽¹⁾. I believe that fundamental anatomic and physiologic changes occur in the myocardium long before any major symptoms are found. Certain common symptoms related by patients to the physician in his daily practice should rouse his suspicions. The patient, during this preclinical period, may complain of the following symptoms: fatigability, tired feel-

⁽¹⁾Read before the Seaboard Medical Association, Washington, N. C., December 5, 1940.

ing in his legs, insomnia, vertigo, gastric distress, drowsiness, hallucinations of sight, hearing, and smell, substernal discomfort, and—probably the most important feature of this syndrome—breathlessness. Other important subjective symptoms are heart flutter, skipping beats, thumping, and palpitation after physical effort or after meals, followed by substernal discomfort, which often comes on during the night. In the cases reported well over half of the patients were under my care for a period of three or more years, and over 90 per cent of the symptoms above listed were related to me before the attack of acute coronary occlusion. Indigestion (flatulence with slight pressure in the chest) is a common symptom of patients past the age of 50, and often these patients have to be convinced that their hearts, and not their stomachs may be at fault⁽²⁾.

History

The relationship of obstruction of the coronary arteries to certain forms of cardiac disturbance has long been known. William Harvey described a characteristic case in which the postmortem examination revealed rupture of the wall of the left ventricle following an infarction of the heart muscle. Although interest in the condition is of recent date, it may be noted that as long ago as 1878 Hammer made a correct diagnosis of thrombotic occlusion of a coronary artery during life, and verified the diagnosis at autopsy⁽³⁾. Herrick, in 1912, and in later publications on the subject, opened the way for subsequent developments in this field of medicine⁽⁴⁾. Widespread interest in the subject was evidenced, and extensive investigations were made of the anatomy, physiology, and pathology of the coronary arteries. These have been followed by experimental and clinical electrocardiographic studies, along with a careful clinical survey of the various aspects of coronary artery disease⁽⁵⁾.

Gross and Microscopic Pathology

The essential pathology of coronary occlusion is the production of an infarct of the heart muscle—an anemic or ischemic nec-

rosis due to extreme narrowing of one of the coronary arteries, which may be sudden or gradual and may or may not be associated with a thrombosis of the artery⁽⁶⁾. The occlusion may be produced in one of the following four ways: (1) by an arteriosclerotic atheromatous narrowing of the blood vessel; (2) by thrombosis in an already sclerotic artery; (3) by syphilitic aortitis of the root of the aorta, which seals the mouths of the coronaries; (4) in rare cases by emboli from vegetations on the valves, which block a vessel.

The vessel most commonly affected is the anterior descending branch of the left coronary artery, so that the area involved includes the anterior part of the wall of the left ventricle. When the right coronary artery is occluded, the infarct includes the posterior half of the interventricular septum and the posterior part of the wall of the left ventricle, with little or no involvement of the right ventricle⁽⁷⁾. If death has been instantaneous, there will of course be no infarct. Grossly the areas are irregular in shape, and pale yellow in color, often surrounded by a red zone. Large infarcts may undergo softening and lead to a rupture of the heart. If the endocardial surface is involved, a thrombus will be formed on the necrotic area; and if the pericardial surface is involved, there will be a patch of pericarditis. Should the patient survive for some time, the weakened area may gradually give way and bulge outward, so that an aneurysm of the heart is formed, with marked thinning of the ventricular wall. The aneurysm usually involves the anterior wall of the left ventricle near the apex. No doubt, many so-called second or third attacks of coronary occlusion with fatal results are, in reality, a rupture of the weakened wall at the site of the aneurysm.

The microscopic pathology depends on the duration of the lesion. If death is immediate, there is no time for necrosis. Should the patient survive for some days, the muscle fibers in the ischemic area swell up and undergo disintegration. The lesion is invaded by polymorphonuclear leukocytes, so that it may resemble an abscess. The vessels of the part are acutely distended, owing to attempts to establish a collateral circulation. The dead muscle is gradually removed and replaced, first by an open granulation

1. Levy, Robert L.: *Diseases of the Coronary Arteries and Cardiac Pain*. New York, Macmillan Co., 1936.

2. Bierring, W. L.: Early Recognition of Myocardial Disease, *Ann. Int. Med.* 8:497 (October) 1934.

3. Boyd, William: *Pathology Internal Diseases*, ed. 2, Philadelphia, Lea and Febiger, p. 65.

4. Herrick, J. B.: Clinical Features of Sudden Obstruction of Coronary Arteries, *J. A. M. A.* 19:2015, 1912.

5. Beckman: *Treatment General Practice*, ed. 2, Philadelphia, W. B. Saunders, p. 549.

6. Whitten, in *Arch. Int. Med.* 45:383, 1930.

7. Boyd, William: *Textbook of Pathology*, Philadelphia, Lea and Febiger, 1933, p. 352.

tissue rich in blood vessels, and later by fully formed scar tissue, which may seriously interfere with the efficiency of the heart. Blood pigment in an old scarred area suggests a former infarct. Gradual occlusion of the coronaries—for example myocardial scarring without the production of an infarct—will finally lead to the same microscopic picture. In this case, the muscle fibers gradually die and are replaced by fibrous tissue; some pathologists call such a condition chronic interstitial myocarditis. No blood pigment is found in these lesions. The branches of the large coronaries form what are known as terminal arteries; each supplies a separate region of the heart musculature. Though some anastomosis does exist, it appears to be too incomplete to allow a collateral circulation of any extent to be established when one of the main arteries is occluded⁽⁸⁾.

Symptoms and Signs

Coronary occlusion can and does occur under almost any set of circumstances, whether the patient is at work, play, or rest; this onset is in contradistinction to the onset of angina pectoris, which most often is precipitated by an emotional or physical exertion. The onset of coronary occlusion is not necessarily marked by extreme pain, and the symptoms may be so insignificant that the patient does not even seek the advice of a physician. The most common signs and symptoms may be divided into those occurring (1) as immediate, and (2) as delayed effects. The first group includes sudden death, pain, and the syndrome of heart failure with shock and collapse. In the patients who succumb rapidly there may not even be time for the complaint of pain. In such cases the damage is so great that ventricular fibrillation probably results, with immediate death.

As stated above, pain is not always encountered; but when it is present, it is usually described as a gripping, vice-like, crushing pain in the lower sternum and epigastrium. Often it becomes more diffuse, and may spread to any part of the anterior or posterior portion of the chest, to the arms, neck, and head. The lower sternum is usually the starting point of the pain, whereas in angina of effort, the pain is most often precordial.

During the pain the patient may be very restless, sometimes rolling about in agony. The pain is usually accompanied by a state bordering on collapse. The patient is pale, haggard, anxious, weak, and often sweating profusely. When this pallor is associated with cyanosis, the face assumes a light blue-grey ashen color that is often described as being characteristic of the malady. In this state of collapse nausea and vomiting are frequent. The pulse is small or absent, the blood pressure lowered—greatly in cases with hypertension. The urine is scanty; sometimes twenty-four hours elapse before micturition. This is probably due to the loss of fluids from sweating and vomiting.

Heart failure may predominate, dyspnea being the chief symptom instead of pain. The degree of myocardial damage and the state of the remaining cardiac muscle are the factors which determine the amount of failure present. The heart sounds are indistinct; gallop rhythm is frequent; a systolic murmur may appear in the apical region; the heart may exhibit extrasystoles, paroxysmal tachycardia, or auricular fibrillation. In rare cases the ventricular septum is involved, and heart block may appear. The above signs and symptoms in the examination of the heart, arteries, and veins are usually far less marked than would be expected from the suffering and the obviously grave condition of the patient. Cheyne-Stokes breathing is common. Signs of pulmonary edema and congestion overshadow the systemic venous congestion. There may be a persistent cough with frothy, sticky, blood-tinged sputum. Moist rales and rhonchi appear in the lungs, usually starting first in the right base. In some cases edema develops rapidly and causes death, as in one of the cases reported in this paper⁽⁹⁾.

The delayed signs and symptoms are fever, leukocytosis, perhaps a friction rub, and occasionally embolism and ruptured heart. The fever is usually low, not over 102 F. A practice should be made of taking the rectal temperature; it is often 2-3° higher than the oral temperature, owing to the extreme peripheral heat loss. The onset of temperature may vary from immediately after the attack to the third or fourth day, and in rare cases may continue for three or four weeks. Associated with the death of the muscle and its disintegration, there is

8. Howell: Textbook of Physiology, ed. 12, Philadelphia, W. B. Saunders, p. 556.

9. Lewis, Sir Thomas: Diseases of Heart, ed. 2, New York, Macmillan, 1937, p. 44.

usually a leukocytosis along with the fever. The white cell count may vary from 12,000 to 25,000.

The weakness of the ventricular wall, which is greatest during the second week after the attack, is responsible for rupture of the ventricular wall, with hematopericardium and rapid death. This accident rarely occurs before the fifth day or after the fifth week.

The clot that usually forms on the affected portions of the endocardium may become detached in small or large pieces and cause an embolism. The emboli may enter and plug any artery in the body, but are more common in the systemic than in the pulmonary system. Embolic accidents may give rise to numerous complications, such as hemiplegia, loss of circulation to a limb, or splenic infarction. The presence of considerable albumin with red blood cells in the urine may indicate that emboli are being released from the clot.

When the pericardium rather than the endocardium is involved and the infarction involves the anterior surface of the heart, a friction rub is produced, which usually appears on the second or third day, and may be very transient or may last a few days. This friction rub is a very important diagnostic sign and should be carefully watched for in doubtful cases⁽¹⁰⁾.

Differential Diagnosis

The differentiation of minor forms of coronary occlusion from angina pectoris is extremely difficult but very important. When an angina patient is seized with an attack more severe than usual and coming on while the patient is at rest, the possibility of coronary occlusion must be considered; and if the physician is in doubt, the patient should be given the benefit of a period of absolute rest. In such borderline cases the heart should be carefully and frequently examined for gallop rhythm or pericardial friction rub. The electrocardiogram oftentimes renders its greatest aid in these atypical cases; however alterations in the tracings may be overlooked unless serial tracings are taken. Other diseases besides angina pectoris that must be considered in mild or atypical attacks of coronary occlusion are intercostal neuralgia, nerve root pressure from a mediastinal tumor, tuberculosis of the thoracic

vertebrae, herpes zoster, or a hypertrophic osteo-arthritis of the spine. The history and physical examination usually clarify the condition or point to other possibilities.

In cases in which death occurs in a few minutes or hours, the diagnosis may also be confusing. There may be a rupture of the heart due to softening of an infarct or weakening of an old aneurysm. In the aortic group there may be rupture of an aortic aneurysm, either dissecting or saccular. However, coronary occlusion is the commonest cause of sudden cardiac death. In some cases no satisfactory cause can be found antemortem or postmortem⁽¹¹⁾.

In recent literature mention has been made of an observation that should be helpful in the diagnosis of coronary occlusion. It is pointed out that almost all types of occlusion are associated with pain which is rhythmical and periodical. This pain syndrome has proved invaluable to me in ruling out the presence of extracardiac anginas due to lesions above or below the diaphragm, such as acute gallbladder disease, ruptured peptic ulcer, acute pancreatitis, intestinal obstruction, acute pneumothorax, and pulmonary embolism or infarct. The similarity between the pains of childbirth and the rhythmical periodical pain of coronary occlusion is striking. Great prognostic value should be attached to the course of these pains; for example, the patient usually succumbs who has periodic substernal or epigastric pains which resemble the uterine pains of the pregnant woman just before delivery. Here the bouts of pain become longer and the pain-free rest intervals shorter until there are no pain-free intervals in spite of adequate morphine dosage, and the patient expires. If, however, the cardiac pains resemble those of uterine inertia, which are strong at first and gradually become weaker and further apart, the patient usually recovers from the immediate attack⁽¹²⁾.

Roentgenographic examinations are extremely valuable in studying preclinical coronary disease, and in the early diagnosis of acute occlusion where other methods may leave the diagnosis in doubt. The excellent work of George Levene has been substantiated in my cases. Levene pointed out that in coronary disease there is a diminished amplitude of cardiac contractions, especially

10. Smith, Fred M.: *Cyclopedia of Medical Surgery*, Philadelphia, F. A. Davis, Special Volume III, p. 761.

11. *Musser's Internal Medicine*, ed. 2, Philadelphia, Lea and Febiger, p. 384.

12. Steinhohn, Peter J., in *Ann. Int. Med.*, vol. 14 (September) 1940.

at the apex, and that the left border of the heart is straight or concave. These findings were elicited by routine fluoroscopy in the series of cases reported in this paper. In the preclinical cases, it seems wise to order for patients who show these abnormalities, with perhaps no other evidence of coronary disease, a period of diminished activities, and to give them the protective ten commandments listed under "treatment"⁽¹³⁾.

Treatment

The treatment of coronary occlusion may be divided into two phases: First, treatment of the acute stage, from the beginning of the attack until the patient gets out of bed; second, treatment during the period of convalescence, or during the preclinical stage, where the patient has not yet suffered an acute attack of coronary occlusion.

In the general field of medicine, there is hardly any condition in which it is more difficult to appraise the value of specific measures of therapy than in acute coronary occlusion. Events occur with such dramatic sequence that one may be too ready to attribute them, whether favorable or unfavorable, to the last procedure employed. There are certain methods of treatment that, for the present, meet with general acceptance among cardiologists, and other methods that must be regarded as still in the experimental stage, or at least open to doubt⁽¹⁴⁾.

Of first importance is the relief of pain. This is best obtained by the liberal use of morphine, pantopon, or dilaudid. The amount necessary will vary; but, as Wolferth teaches, the dose is that which is required to control the pain. Often a grain of morphine is given within one hour⁽¹⁵⁾. To obtain quicker results, I make it a practice to administer the drug intravenously with the atropine. During the early minutes after the onset in critical cases, the patient should not be moved or even undressed. Adrenalin (1-1000 solution) in 0.5 to 1 cc. doses may save a life when the patient is in extreme shock. Coramine has proven very satisfactory as a follow-up to the adrenalin. Usually 1 ampule of coramine is given every six hours during the day.

Oxygen administered by funnel, or, better, by the use of a tent, has proved invaluable in cases giving evidence of decompensation

with pulmonary edema, dyspnea, and cyanosis. In some cases oxygen relieves the terrible vice-like pain when morphine fails to control it. Most patients become less restless when oxygen is administered, and this is of utmost importance. Oxygen also tends to relieve the nausea and vomiting, which at times is so distressing.

Complete mental and physical rest is paramount. Frequent tiring examinations should be dispensed with. The use of enemas or catheterization is unwise during the first few days, even though there is no bowel movement or emptying of the bladder.

Aminophylline, given intravenously, seems to be of benefit in some cases during the acute attack, its purpose being to increase the coronary flow and perhaps diminish the area of infarction. After twenty-four hours, it often seems advisable to replace some of the fluids that have been lost. Seven hundred and fifty cubic centimeters of normal saline solution are given intravenously by the drip method, followed in a few hours by 100 cc. of 50 per cent glucose or sucrose solution intravenously.

The rest of the treatment is expectant. Heart block with Adams-Stokes' syndrome is sometimes encountered (as in a case reported in this paper). Adrenalin in 0.5 cc. doses every three to four hours usually controls this condition. Paroxysmal tachycardia with collapse is encountered at times; and in an attempt to prevent this condition, or to prevent auricular fibrillation, I always give 3 grains of quinidine sulfate three times daily for two weeks following the attack. The drug is also life-saving during attacks in doses of 5 grains every four hours. Digitalis is not used except in persistent cases of auricular fibrillation that cannot be controlled with quinidine and in congestive heart failure.

Nursing care is of great importance; above all, the patient must be made comfortable. The diet is very simple and should range between 500 and 750 calories daily, with only liquids administered during the first few days. The patient should have at least eight weeks of absolute bedrest at any price. Stroud thinks the prognosis is better in posterior lesions, and shortens the length of bedrest⁽¹⁶⁾. After the period of bedrest, the patient should spend about three weeks in the process of getting up, beginning by sitting on the side of the bed or in a chair,

13. Levene, George, et al: Roentgen Diagnosis of Coronary Disease, *Am. J. Radiol.* 31:588 (May) 1934.

14. Levine, Samuel A.: *Clinical Heart Disease*, Philadelphia, W. B. Saunders, 1937, p. 148.

15. Wolferth, C. C.: Personal communication.

16. Stroud, William D.: Personal communication.

gradually increasing the time from five minutes twice a day until the patient is out of bed two hours in the morning and two hours in the afternoon. When the patient becomes ambulatory, the return to activities should be gradual; in most cases, he should permanently diminish his activities to some extent.

The treatment during the ambulatory period is simple, but in most respects very difficult. The patient is very apprehensive about his heart, and every pain in the chest frightens him and the family. The restricted activities usually tend to increase nervousness and irritability. In general, the treatment after bedrest and the treatment of a patient with coronary sclerosis who has not suffered an occlusion are the same. Possible harmful effects have been attributed to tobacco⁽¹⁷⁾. I do believe that tobacco should be omitted, not because of any harm, but because there is no benefit from its use. Patients are allowed to smoke a denicotinized cigarette called "Sano".

The following outline is given to every patient where there is a suspicion of preclinical coronary disease, and to patients recovering from an occlusion. Some patients call them the ten commandments.

1. Rest one-half to one hour after meals. Relax as much as possible; try to sleep. Do not read during this period. Sleep eight to nine hours at night.
2. Do not exert yourself to the point of pain or fatigue.
3. Avoid sexual excesses.
4. Eat plain food. Do not overeat. Eat sparingly of foods that are high in cholesterol, such as eggs, butter, cream, liver, and animal fats.
5. Avoid hurried meals and extremely hot or cold drinks. Use coffee and alcohol in moderation.
6. Avoid effervescent medicines.
7. Avoid any sudden exertion, such as lifting or pulling.
8. Do not walk up hills or stairs, except very slowly with intervals of rest after each step. Avoid walking against the wind or walking in extremely hot or cold weather.
9. Avoid constipation.
10. Avoid hurry, worry, quarrels, and overexertion, either physical or mental⁽¹⁸⁾.

17. English, J. P., et al., in *J. A. M. A.* 115:1327 (October 19) 1940.

18. Thewlis, M. W.: *Preclinical Medicine*, Baltimore, Williams and Wilkins, p. 75, 1939.

Report of Cases

Case 1. L. D. W., a white male, 51 years of age, was first seen on April 26, 1938, complaining of gas around the heart accompanied by headaches, belching, chronic constipation, and soreness in the right lower quadrant, with a generalized soreness in the left upper quadrant, and some epigastric discomfort. He had a tired feeling in his legs, fatigue, and occasional skipping of the heart. A feeling of pressure over the entire abdomen was described. The patient stated that he had been well until 1933, when he noticed discomfort in the left upper quadrant, and thought it had some relationship to food. The past history was negative except for an injury in childhood to the lower chest anteriorly.

The physical examination was negative except for a blood pressure ranging from 90 systolic, 60 diastolic to 130 systolic, 80 diastolic. A complete laboratory examination revealed a white cell count of 14,700, with no increase in the sedimentation rate. A basal metabolic reading, urinalysis, blood chemistry, and all other blood studies were in normal limits. X-rays of the heart and lungs, and a gastro-intestinal series were normal. Electrocardiographic tracings were in normal limits, except for a low voltage and amplitude in lead III and notching of the P wave in lead II.

The patient was seen at intervals of one to four weeks, with a complete check-up yearly, including a basal metabolic reading, blood studies, fluoroscopic, and electrocardiographic studies. Improvement was noticed under treatment consisting of a balanced diet (he was warned against overeating), bulk laxative, and aminophylline with phenobarbital, grains 1/4. The systolic pressure continued to range from 90 to 130, with sensations of weakness and dizziness associated with the periods of hypotension. The leukocyte count remained continuously elevated above 10,000, and the electrocardiographic tracings taken twice yearly continued to show a low voltage and amplitude in lead III with notching of the P wave in lead II.

On July 12, 1940, the patient experienced more than the usual amount of discomfort in the left upper quadrant and epigastrium with gaseous eructations. Electrocardiographic tracings revealed no abnormalities not already stated. A gallbladder series

showed normal emptying time after a fatty meal, and no stones were visualized. The patient was advised to rest, and went to his seashore cottage, where he did some fishing. On July 21 he experienced substernal discomfort after lifting and carrying an out-board motor (this is the first history of angina of effort). The following day the patient took an automobile trip, on urgent business, to Washington, D. C., and felt in fair health. He continued the business trip to Richmond, Virginia, on the following day; after a business conference of two hours, he felt very tired and listless with slight substernal discomfort. He went to bed early and had a restful night. The following morning, July 25, he ate breakfast and immediately felt discomfort in the epigastric region with gaseous eructations and slight nausea. Between Richmond and Petersburg, the patient suddenly felt extremely ill and asked the chauffeur to stop and get a package of baking soda. He became very cyanotic, and sweated profusely. He had an intense, vice-like substernal pain, boring in character, accompanied by vomiting and severe dyspnea. He was hurried to a Petersburg hospital and a physician was summoned. Bed rest was advised and a hypodermic of morphine sulfate, grains $1/4$, was administered. The patient felt impending death. I was summoned and reached the patient about five hours after the attack. I found him extremely cyanotic, dyspneic, pulseless, and sweating profusely. He was much excited and had projectile vomiting. A hypodermic of atropine sulfate, grains $1/150$, and morphine sulfate, grains $1/4$ was ordered immediately, and $1/4$ grains of morphine and $1/200$ grains of atropine were given every half hour until pain was relieved. The patient was put in an oxygen tent. He was much relieved in one hour after a total of 1 grain of morphine was administered. The leukocyte count was 15,500. The temperature was 100.2 F. orally and 102.5 F. rectally. Dr. J. M. Hutcheson, of Richmond, was called in for cardiac consultation and advised that electrocardiographic tracings be taken in two days to substantiate the diagnosis of acute coronary infarction. The patient continued with lessened substernal pain, which radiated to the shoulder blades, arms, neck, and epigastrium, for two days. Treatment consisted chiefly in adequate control of pain with morphine; moderate sedation with barbiturates

was given, and oxygen was administered. His recovery was uneventful, except for a bout of substernal pain with moderate cyanosis about nine days later, when oxygen therapy was used with success. Much abdominal discomfort with borborygmi and belching has continued to date. Arthritis of both hands has been a residual complication, and might explain the continued high white cell count. The general rules given above continue to guide the patient, who has occasional days of depression and substernal discomfort. His total bed rest was ten weeks. He was thought to have a rather large area of infarction, although no detectable cardiac decompensation was noted except a few fine rales at the right base posteriorly. The patient also has an increase in the frequency of dropped beats, especially upon lying down. Treatment at the present is entirely symptomatic. Serial electrocardiographic tracings are made at monthly intervals.

Case 2. Mrs. C., seen in July, 1940, illustrates a dramatic case that was not diagnosed until after death. The patient was a well-nourished woman of 58 years. A house call was requested at leisure. The patient did not seem acutely ill, but complained chiefly of shortness of breath with much gas and indigestion. She had a chill, which lasted about five minutes, followed by fever, which on my arrival was 103 F. The skin was dry and hot; there was a slight cough, with a few fine moist rales at the right base posteriorly. A malaria smear was obtained and proved positive for tertian. The Wassermann test was negative. Atabrin treatment was prescribed, and another house call was made at the end of five days; the patient seemed much improved, but still felt a little short of breath, and complained of slight nausea and pain in the back at the costovertebral angle. As the urine showed a few clumps of leukocytes in a centrifuged specimen, urophosphate tablets were prescribed. About one hour after I left the patient, and immediately after she had swallowed the first urophosphate tablet, she fell from a sitting position on the side of the bed to the floor, dead. From the history of dyspnea, slight nausea, and gastric discomfort I believe that this patient died of acute coronary occlusion, or rupture of the heart following an acute occlusion.

Case 3. Mrs. C. H. S., a white female, 58 years of age, was first seen on September

17, 1937, complaining of choking spells with severe pain for the past seven years, which had recently grown much worse, and were usually brought on by the exertion of walking or exercising the arms while giving beauty parlor treatments. Attacks lasted about twenty minutes, radiating from the middle of the chest to the arms, face, and back of the neck. There was much gas with belching. She took a sulfotone tablet four times a day. On closer questioning, the patient stated that she often had to sit on the curb or stand stark still after the attack began. She had pain over the heart and chest, with shortness of breath on effort, and was very constipated. She had been treated for diabetes five years previously with insulin; later the diabetes was controlled by diet alone. Her father had died of heart disease and diabetes. The physical examination was essentially negative, except that the blood picture showed a typical primary pernicious anemia. The patient responded nicely to treatment of the anemia with liver injections. The diabetes remained under control, and the anginal attacks became almost absent. Electrocardiographic tracings revealed a possible old infarct, indicated by a flattened T wave in lead I. The patient continued to improve until July, 1938. While she was sitting on the front porch of a next-door neighbor, she suddenly cried out and vomited a huge amount, and fell from the chair. Upon my arrival within three minutes, she was dead.

Case 4. C. V. E., a white male, 36 years of age, was seized with violent pain in the epigastrium accompanied by shock, cyanosis, vomiting, and profuse sweating. The history and physical examination were negative. Morphine sulfate, grains $1\frac{1}{2}$, was given within twelve hours, along with intravenous aminophylline. He was removed to the hospital, where suspected poisoning was investigated. The pain became generalized over the entire abdomen, with almost board-like rigidity, and a diagnosis of ruptured peptic ulcer was made. Electrocardiographic tracings were made before the scheduled operation, and showed changes extremely suggestive of coronary occlusion. The patient died within an hour after the tracings were made. Autopsy corroborated the clinical and electrocardiographic diagnosis.

Case 5. J. K., a male Negro, 46 years of age, was first seen in February, 1939, with lobar pneumonia. He recovered after sulfa-

pyridine treatment of Type II pneumococcus. During cultures for pneumococcus, it was discovered that the patient had a positive Wassermann reaction. During his convalescence from pneumonia bismuth injections were given intramuscularly, and after six months' treatment the patient felt better than in years, although some substernal discomfort was noticed after slight exertion. Electrocardiographic tracings revealed slight evidence of changes in the coronary arteries. The patient died within four hours after an attack of severe substernal pain, dyspnea, shock, and vomiting. Death might have been caused either by an occlusion of the mouth of the coronaries, due to luetic involvement, or by rupture of a syphilitic aneurysm.

Case 6. F. I., a white male, 56 years of age, was first seen by me on February 28, 1938, suffering from severe substernal pain. The patient had been taking daily between eight and ten 1/100 grain nitroglycerin tablets. Electrocardiographic tracings showed flattening of the T wave in lead I and alterations in the QRS complexes in three leads. The patient seemed extremely nervous and presented a very noticeable purplish flushing of the face. Laboratory studies and physical examination were not remarkable, except for a red cell count of 11,200,000. Venesection at regular intervals, with x-ray therapy of the long bones, has kept the patient free from anginal pain and from any blocking of the terminal coronary arteries to date, as revealed by the electrocardiographic tracings. The tracings remain essentially the same as the first.

Case 7. M. L. B., a white male, 42 years of age, was first seen by me in shock, with severe substernal pain. The patient had suffered two such severe attacks, and had had six weeks' bed rest following each attack. Anginal attacks occurred three or four times a day. The patient carried amyl nitrite ampules and a hypodermic syringe with morphine at all times. During a check-up, the patient revealed x-ray evidence of cholelithiasis after oral dye administration. Electrocardiographic tracings revealed typical evidence of old and new infarcts. Physical and laboratory examinations were essentially negative, except for the patient's obesity. The patient suffered a severe coronary occlusion, which was his fourth attack, and succumbed before a physician could arrive.

Case 8. E. D., a white female, 62 years of

age, was first seen in April, 1940, suffering with severe dyspnea with slight substernal discomfort. Extensive pulmonary edema developed, with hepatic engorgement. Under morphine, aminophylline, and 50 per cent sucrose solution, the patient made excellent progress. On the sixth day of her illness, electrocardiographic tracings revealed evidence of a coronary infarct, most likely of the right coronary artery. Four doses of salyrgan theophylline were given intravenously, with complete clearing up of residual edema at the lung bases; the liver returned to normal size, and a slight ankle and leg edema disappeared. Due to the severity of the attack and the advisability of longer bed rest with occlusion of the right coronary, the patient was kept in bed for three months, and gradually let out of bed. The patient died in her sleep one week after getting up from enforced bed rest.

Case 9. J. O. M., a white male 62 years of age, was first seen on January 30, 1939, complaining of shortness of breath and pain in the epigastrium, with a sensation of pressure and choking. The patient did not seem acutely ill. For the past seven years he had suffered with vague upper abdominal pain. He sleeps on one pillow. His legs hurt at intervals; he had slight ankle edema and erythema of the palmar surfaces of both hands, with prickling sensations. All of the above symptoms were increased on exertion. His past history, habits, and physical examination were essentially normal, except for a blood pressure of 190 systolic, 90 diastolic in the left arm and 196 systolic, 102 diastolic in the right arm, and slight arteriovenous compression in the eye grounds. Electrocardiographic tracings showed left axis deviation, and a fluoroscopic examination revealed a slight cardiac enlargement with diminution of the amplitude and concavity of the left border. Under treatment for hypertension, the patient made remarkable improvement. In May, during excessive family and business disturbances, the patient was seized, while at rest, with severe substernal pain followed by shock, fever, and leukocytosis. Electrocardiographic tracings pointed to occlusion of the anterior descending branch of the left coronary artery. Pulmonary edema of moderate degree developed. Serial electrocardiographic tracings substantiated the diagnosis of acute infarction. The patient responded well to treatment, and after bed rest was referred for another com-

plete checkup to another cardiologist. The patient continued to improve and is in apparent good health at the present time.

Case 10. W. M. H., a white male, 63 years of age, was first seen in consultation on March 3, 1938. His chief complaint was mild pain in the epigastrium, with extreme nausea and vomiting. The physical examination and laboratory studies were essentially negative, except for a blood pressure of 192 systolic, 90 diastolic. Electrocardiographic studies did not reveal definite evidence of coronary artery disease. The patient remained acutely ill for twenty-four hours, and bed rest was advised for five weeks. A second attack, very similar to the initial attack, occurred six weeks after the first illness. The electrocardiographic tracings still remained in doubt. A consultation did not confirm or deny the possibility of coronary occlusion. The patient suffered a third attack, following which there were typical electrocardiographic changes. At this time, the patient had not been out of bed for four months. The fourth attack occurred about five months after the initial attack, and the patient died before a physician could arrive. This case is interesting in that no severe pain was experienced, nausea and vomiting with shock being the chief symptom.

Case 11. D. J. W., a white male 47 years of age, was seen on August 16, 1937, complaining of pain in the left anterior chest wall, which was accentuated by deep breathing. He was not acutely ill, but had a slight cold and feared an attack of pleurisy, which he frequently had. Examination two years previously at a well known clinic had revealed no significant electrocardiographic changes. The physical examination and laboratory studies were normal, except for a blood pressure of 180 systolic, 92 diastolic, and prostatic hypertrophy. The patient was worried about a penile sore which he had had twenty years previously, and requested a spinal fluid Wassermann test. Extensive neurological examination and the spinal fluid test were negative. Electrocardiographic studies revealed marked slurring of the R wave and prolongation of the PR interval; they were otherwise normal. The patient was observed often thereafter for one and one-half years, but advice as to curtailment of activities was generally ignored. In June, 1939, the patient suffered severe pain in the lower substernal area, with marked shock. The pain radiated to both arms and neck

and profuse perspiration, restlessness, and cyanosis were noted. One grain of morphine was administered within an hour, with much relief. The patient then reached up and grasped the head of the bed with his right hand, and died within ten seconds. Myocardial injection of adrenalin and cardiac massages were of no avail.

Case 12. M. D., a white female 56 years of age, was first seen in consultation in April, 1940, complaining of pain in the epigastrium and lower sternum. She had been under a physician's care for four years, and had been given a diagnosis of angina pectoris; however, this attack had not subsided as promptly as the previous seizures. Electrocardiographic tracings revealed myocardial damage, with some possibility of an old infarction. A complete blood count revealed a hypochromic anemia, which responded well to ferrous sulfate medication, with a lessening of the number of anginal attacks. After her hemoglobin passed 90 per cent, the patient suffered a mild attack of coronary occlusion, substantiated by electrocardiographic tracings. (This case, together with case 3, suggests that too extensive treatment of anemia may precipitate an occlusion of the coronary arteries, owing to the increased viscosity of the blood. However, an anemia would produce, to some degree, myocardial anoxemia, which is detrimental. It seems that, possibly, it would be best to keep a hemoglobin level of between 75 and 85 per cent, with 3,500,000 to 4,000,000 red blood cells.)

Case 13. R. F. C., a white male 79 years of age, was first seen on April 2, 1940, acutely ill with extreme dyspnea almost amounting to orthopnea. He was cyanotic and sweating profusely. There was very little pain, but it was definitely rhythmical in character. The patient seemed much improved within the hour after opiates were administered. There was no evidence of cardiac failure at any time, and no cardiac arrhythmias were noted. The patient wanted to get up the following morning, but a leukocyte count of 14,250 made it seem safer to advise bed rest for a few weeks. The oral temperature never went above 98 F.; however, the rectal temperature reached 100.9 F. Serial cardiograms taken twice weekly revealed typical changes suggesting a myocardial infarct. The patient got along extremely well and was allowed to get out of

bed gradually after three weeks; however, he became so despondent over his condition, in spite of reassurance and cheerful family life, that he took his life in May, 1940.

Case 14. W. D. L., a white male 35 years of age, was first seen in September, 1937, complaining chiefly of precordial pain on exertion, with marked dyspnea, and a weight loss of 40 pounds. He gave a history of sixteen months' illness beginning with acute gonorrheal urethritis, followed by an epididymitis. On examination, a loud blowing systolic apical murmur was discovered, along with a soft rumbling presystolic murmur, gradually merging into the systolic murmur. A thorough examination, including electrocardiographic tracings, fluoroscopic examinations, blood cultures, and spinal fluid examinations, led to the diagnosis of mitral valve insufficiency due to gonococcic blood stream infection. A course of sulfanilamide with bed rest was prescribed, with slight beneficial effects. The patient was rather difficult to control. He was seen at intervals of about one month. During one year the mitral systolic murmur changed into a crescendo presystolic murmur, and at times the patient had blood streaked sputum. A tympanic aortic second sound developed, slowly changing into a full-fledged aortic diastolic murmur. The blood pressure readings reached 300 systolic, 0 diastolic, with Corrigan pulse, capillary pulse, Duroziez murmur, visible arterial pulsation, femoral snap, Traube's sign, and visible venous pulse, all denoting a far advanced aortic insufficiency. The cardiac enlargement became tremendous; and as the aortic insufficiency became more pronounced, the slightest exertion brought on intense pain, controlled only by morphine. During two separate severe attacks of pain electrocardiographic tracings were made, with changes indicating infarction of the myocardium. The patient became a morphine addict, taking as much as 12 grains of morphine daily by hypodermic injections. He is now maintained on 6 grains daily. This patient illustrates infarction due to aortic insufficiency where the coronary circulation is insufficient following an anatomic change. He has been a curiosity to many clinics of the eastern seaboard, and has spent much time in teaching hospitals. He has just recently shown signs of cardiac decompensation.

Case 15. E. H. G., a white male 64 years

of age, was seen on April 4, 1938, with lower substernal pain, dyspnea, shock, and cyanosis. Electrocardiographic tracings and laboratory findings corroborated a diagnosis of acute coronary occlusion. Bed rest and minimum drug treatment were prescribed. The patient made an uneventful recovery, and returned to active work on his farm.

Case 16. S. M., a white male 46 years of age, walked into the hospital on May 11, 1938, complaining of substernal pain radiating to the left arm and neck, with slight cyanosis and no nausea or vomiting. Electrocardiographic tracings and the usual examinations substantiated a diagnosis of acute coronary occlusion. The patient of necessity continued an active life, after six weeks' bed rest. Plowing, picking cotton, pulling tobacco, and cutting timber are his daily routine. The patient has occasional pain in the chest, goes to bed for three or four days without consulting a physician, and usually calls by my office two or three times yearly for electrocardiographic tracings.

This case and case 15 illustrate the importance of a lack of emotional strain. Neither of these men have any fear whatsoever of their cardiac condition, and neither can afford rest; it must be remembered, however, that both of these patients probably suffered only a small infarction.

Case 17. T. S., a white male 62 years of age, was first seen in September, 1937, complaining of indigestion, fatigability, and headaches. The physical and laboratory examinations were essentially negative, except for a blood pressure of 192 systolic, 110 diastolic, and a 2 plus reaction for albumin with phenolsulfonphthalein excretion of 45 per cent. Fluoroscopic examination of the chest revealed a diminution of the heart beat at the left border of the apex and marked concavity of the left border. The patient was seen at monthly intervals. On March 15, 1939, the patient was seized with severe dyspnea and collapsed on the street. When he was brought to the hospital, the patient was pulseless and in a state of severe shock. Adrenalin, coramine and oxygen were administered. The patient revived, and within three hours felt and looked well. Electrocardiographic tracings were consistent with a diagnosis of coronary occlusion. Bed rest of six weeks was advised, and the recovery was uneventful.

Case 18. J. W., a white male 68 years of age, was first seen on August 3, 1938. He stated that four weeks previously he had had a sensation of pressure in his chest and head, with shortness of breath, followed by nausea and vomiting. He perspired freely and felt cold and clammy. He stayed in bed for two days. He then had a feeling that his heart was beating too slowly, but felt good otherwise. On physical examination, the blood pressure was found to be 138 systolic, 80 diastolic in both arms, the pulse 46, and the temperature 96 F. Fluoroscopic examination revealed moderate cardiac enlargement, with absent left apex beat. Electrocardiographic tracings revealed changes consistent with an infarction with a partial heart block (the PR interval was .24). His basal metabolic reading was -35. The patient continued to feel well, and electrocardiographic tracings since have shown improvement; a tracing made on June 10, 1940, showed a PR interval of .20, and occasional extrasystoles. The patient could not be persuaded to take any bed rest; and since one month had passed since the attack before he was seen, it seemed most probable that cicatrization was complete.

Case 19. G. C. W., a white male 57 years of age, was first seen in bed on May 1, 1940, complaining of substernal pain, nausea, and weakness. The patient had been suffering from angina of effort for the past three and one-half years, the attacks lasting for ten to fifteen minutes, and sometimes occurring three or four times daily. Nitroglycerin, grains 1/100, under his tongue relieved the attacks. On examination the patient was found to be cyanotic, sweating profusely, and very dyspneic, with fine, moist rales scattered throughout both lung fields. Morphine relieved the pain. Electrocardiographic tracings revealed changes suggesting that the patient had suffered an occlusion. The rectal temperature was 102 F., and the white cell count 21,000. A friction rub was elicited on the third day. The patient made an uneventful recovery. It is interesting to note that the anginal attacks have been much less frequent since the acute coronary occlusion.

Case 20. L. L., a colored female 44 years of age, walked into my office complaining of intense dyspnea with substernal discomfort, not severe. The patient was sweating profusely and was certain that death was near. Her pulse was so rapid and irregular that it could not be counted, and there were moist

rales throughout the lung fields. Morphine and digitalis were given intravenously after electrocardiographic tracings were obtained, showing auricular fibrillation. The patient was given a prescription for quinidine sulfate, grains 5, three times daily, and was told to stay in bed for three weeks. Tracings taken after bed rest revealed an inverted T wave in lead I, with changes in the QRS interval. The auricular fibrillation was controlled before the patient left my office, and has not returned to date. However, the patient continues quinidine, 3 grains at bedtime, for extrasystoles that occur when she is lying down.

Case 21. Mrs. F. F., a white female, 57 years of age, was first seen in August, 1937, about 1 a. m., suffering from severe orthopnea without any pain. Cyanosis was pronounced and there was profuse sweating. She had awakened from sound sleep. The blood pressure was 140 systolic, 90 diastolic. (The family related that she suffered from hypertension.) There was massive pulmonary edema, and the patient was pulseless, with very distant heart sounds. She rapidly became semi-comatose. Adrenalin, coramine, alpha-lobeline, and 50 per cent glucose were given alternately at intervals of thirty minutes. Twice respirations and heart sounds ceased. One cc. of adrenalin was given in both instances into the cardiac muscle by means of a spinal puncture needle, with rapid response. The patient was comfortable for three days, then expired suddenly. Electrocardiographic tracings taken about two hours before death indicated that she had suffered an acute coronary occlusion.

Case 22. J. R., a white male 52 years of age, was first seen on November 5, 1940, complaining of substernal pain, vice-like in character, radiating over the entire abdomen. He was slightly cyanotic, and was sweating profusely. Physical examination was negative except for obvious slight shock. The blood pressure was 90 systolic, 60 diastolic. After $\frac{1}{4}$ grain of morphine the patient felt better. I advised him to go home and rest one week and return for electrocardiographic tracings. Tracings one week later were suggestive of myocardial infarction, and the patient was finally persuaded to take one month's bed rest¹⁹.

Summary and Conclusions

In 22 cases of acute coronary occlusion almost every sign, symptom, complication, and diagnostic problem was encountered.

1. The general practitioner should be able to diagnose these cases correctly in most instances by a careful history and physical examination.
2. More attention should be directed toward recognizing preclinical coronary artery disease before an acute episode has occurred.
3. These cases verify the value of roentgenographic studies of the heart as an aid to diagnosis in the preclinical and the clinical stages of the diseases.
4. There was, in most cases studied and reported, a definite rhythmical periodical pain in acute coronary occlusion, which is of aid in diagnosis.

CAROTID SINUS SYNDROME

Report of a Case

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The ability to determine correctly the cause of unconsciousness, fainting attacks and convulsions is a matter of great importance, for there is hardly a condition in the field of medicine that disturbs a patient or affects his general morale as much as does the loss of consciousness or a severe attack of vertigo. I will attempt to discuss briefly carotid sinus syndrome, a cause of unconsciousness. Until recently very little was found in the literature relative to this condition.

For some time it has been recognized that the autonomic nervous system plays an important part in the control of the circulation. This system is made up of two sets of afferent nerve fibers arising in the blood vessels throughout the body: first, pressor fibers, which when stimulated cause a vasoconstriction, increased blood pressure and acceleration of the heart; second, depressor fibers, which when stimulated give rise to vasodilation, decreased blood pressure and slowing of the heart. The normal stimulus that

19. Boyd, L. J., and Werblow, S. C.: Coronary Thrombosis Without Pain, *Am. J. M. Sc.* 194:314 (December) 1937.

Read before the Buncombe County Medical Society, Asheville, October 7, 1940.

gives rise to these reflexes is the intravascular pressure. A general increase in blood pressure would stimulate the depressor fibers, setting up a reflex which would result in vasodilation, thus restoring the normal condition. This interplay of pressor and depressor reflexes is so delicate that normally the heart rate and blood pressure are kept at quite constant levels. It has recently been found that a highly specialized part of the pressor-depressor regulatory system is located in the carotid sinuses. Anatomically, the carotid sinus is a bulbous dilation of the internal carotid artery just after it leaves the common carotid. In the adventitial coat of the artery at this point there is a fine plexus of nerve fibers with specialized end organs. These fibers run together to form a definite nerve, the intercarotid, which follows the glossopharyngeal nerve as far as the medulla and enters the vagus nucleus. Other smaller nerves run directly to the superior cervical sympathetic ganglion.

The question has been raised as to whether the symptoms of fainting and convulsions are due to mechanical occlusion of the carotid artery, with a resulting cerebral anemia. Experimentation on animals has revealed that this is not the case, for occlusion of the artery below the sinus not only did not cause such changes, but in some instances resulted in a rise in blood pressure and speeding of the heart presumably due to a decrease in the intra-sinusal pressure. Hening showed in 1923 that slowing of the heart could be caused by pressure over the carotid sinus even when the vagus was separated from the artery, thus establishing the fact that a true reflex was involved. The reflex has its afferent limb in the intercarotid nerve, its synapses in the medulla, and its efferent limbs through the vagi and the sympathetic system. Since Hening's discovery much experimental work has been carried out on animals. Some of the facts that have been established are: first, that increased pressure over the carotid sinus causes a slowing of the heart and fall in blood pressure; second, that all these effects are abolished by denervation of the carotid sinus or section of the intercarotid nerves, because the afferent limb of the reflex is destroyed; third, that the reflex has both sympathetic and vagal efferent pathways, the heart rate being determined chiefly by vagal stimulation or inhibition, the vasomotor tone by sympathetic control. The concentration of these fibers

in the carotid sinus forms presumably a delicate mechanism for the control of blood entering the brain.

It is recognized that the best method to stimulate a carotid sinus in man is to press on it. The maximal effect of stimulation can be obtained only by pressure directly over the sinus. For best results the head should be tilted slightly backward and to the side; in this position the carotid sinus is usually located behind the angle of the jaw at the level of the upper border of the thyroid cartilage. Weiss in his series of examinations of patients who complained of fainting or dizziness, not explained by any other known pathology, found that pressure on one or both of the carotid sinuses was followed regularly by dizziness, fainting and convulsive movements. Practically all of his patients were above 55 years of age, and as a rule, they showed arteriosclerosis and evidences of coronary or other organic heart disease.

Weiss divided his cases into three groups: first, those showing cardiac standstill or slowing of the heart, with or without marked fall in arterial blood pressure; second, those showing marked fall in blood pressure without pronounced cardiac slowing; third, the younger cases showing extreme paling of the face followed by intense flushing but without much slowing of the heart or fall in blood pressure. In the induced attacks of unconsciousness the blood pressure usually falls sharply. Some authors report that some patients suffer a systolic pressure fall of 50 or more millimeters of mercury. In such cases the diastolic pressure was often too low to be recorded. The heart rate, as a rule, is markedly slowed by mechanical pressure over the sinus. It has been reported that in a few cases the heart could be stopped altogether for an indefinite time. The longest cardiac standstill recorded by Baker was 15-17 seconds. Fainting and convulsions usually come on after an asystole of 7 to 10 seconds.

Robinson, in a study of eight patients exhibiting a hyperactive carotid sinus reflex, made measurements of the venous blood pressure before, during and after the induction of carotid sinus syncope. There was no significant change in venous blood pressure prior to the convulsion. During the convulsion the venous blood pressure tended to rise moderately but promptly returned to its resting level as soon as the muscular activity

ceased. Stimulation of a sensitive carotid sinus by mechanical pressure usually manifests itself by marked changes in the respiration, in addition to the above symptoms. In the case that I will describe later this was one of the earliest symptoms. Breathing becomes deep and labored. This is usually accompanied by a mild degree of uneasiness and apprehension. Electrocardiographic observations on the carotid sinus reflex made by Sigler showed the predominant vagal effects on the heart to be slowing or standstill through stimulation of the sino-auricular node and various grades of auriculoventricular block. Right carotid sinus pressure had a greater tendency to produce complete standstill. Pressure on the left had a greater tendency to produce auriculoventricular block. It is suggested that the variation in response of the right and left nerves, as well as the difference in response in different hearts, is dependent on variations in the number of vagal terminals of the respective nerves in various portions of the heart. The basal metabolic rate in a number of patients studied by various authors has been found to be abnormally low. Even though the patient is unconscious from an induced attack for fifteen or twenty minutes, there seem to be no harmful effects resulting from the procedure.

In order to show that the reflex is an interplay of the vagal and sympathetic components of the autonomic nervous system, Baker administered drugs to act specifically on these components. Adrenalin in sufficient quantity was given to cause strong stimulation of the sympathetic system. It was found that this drug, through its property of stimulating the sympathetic system, increasing the heart rate, increasing blood velocity and blood flow, stimulating the heart muscle directly, and stimulating the accelerator fibers of the heart, counteracted both the cerebral and the cardiac reactions. Atropine paralyzes the parasympathetic or the vagus nerve endings, but does not affect the vasomotor reactions which take place through the sympathetic nervous system. Therefore it was concluded that atropine stops the cardiac effect of carotid pressure but not the cerebral effects. Adrenalin counteracts both the vasomotor cerebral response and the cardiac response. Recent experimental and clinical elaboration of the effects from an abnormally functioning carotid sinus has led the anesthetist and surgeon to be on guard against

disturbances that may arise during general anesthesia in a patient with a sensitive carotid sinus.

It is pointed out that digitalis given preoperatively may be dangerous, since it sensitizes the carotid sinus mechanism. Likewise drugs used for narcosis, such as the anesthetic gases, certain barbiturates, and avertin, have an added hazard because they exhibit a similar effect on the reflex. Morphine and ether when the narcosis is not deep may elicit a similar response, and sudden deaths during anesthesia in many instances may be closely related to carotid sinus activity. The method of combatting this condition, when emergency anesthesia is necessary on patients with sensitive carotid sinus, is to inject novocain around the sinus. This seems to prevent the attack. The same holds true for operations on the neck, such as thyroid operations, where the sinus is apt to be stimulated. Novocain injected around the sinus has been a life-saver in several instances. It has been found easy to infiltrate the wall of the carotid sinus with novocain by inserting a fine hypodermic needle into the tissues over the sinus until the wall of the artery could be felt to pulsate against the tip of the needle.

It has been reported that the United States Government is examining its aviators thoroughly in the hope of preventing any possibility of unconscious attacks during flight, and carotid sinus syndrome is one of the conditions searched for.

There is no specific treatment of hyperactive carotid sinus reflexes. Therapy must vary according to the individual case. In those cases with mild symptoms and infrequent attacks no treatment is required other than reassurance. Tobacco, alcohol and coffee should be prohibited until it is determined whether they are responsible. In patients with moderately severe symptoms and more frequent attacks, the patient should be instructed to avoid turning his head quickly, looking upward and stooping suddenly. He should avoid any constriction about the neck.

If the spells are quite severe and occur at intervals sufficiently close to interfere with the patient's work or activity, medication is indicated. The drug most commonly used is atropine. Attacks are usually relieved by daily doses of belladonna, if enough of the drug is given to dry the mouth slightly but not uncomfortably. This, of course, is spe-

cific in the vagus type and has no effect on hypersensitive cerebral reflex. In the cerebral type of sensitivity no specific therapy is available. Drugs that have been used are dilantin, phenobarbital, benzedrine and others.

Stevenson⁽¹⁾ reports five cases where x-ray therapy was used as the only specific type of treatment in hypersensitive carotid sinus, and in this small number of cases it seemed to be of definite prophylactic value.

Where the attacks are severe and thorough medical treatment has been carried out without success, operation is indicated in selected cases. Denervation of the carotid sinus is the operation performed. It is not without danger, especially in older persons.

Case Report

A white female patient, aged 38, was admitted to the State Hospital on July 20, 1940. The commitment paper stated that mental changes had been observed in the patient for five years prior to her commitment. No mention of unconscious attacks or convulsions was made in the commitment paper. The anamnesis obtained at the time of the patient's admission to the hospital stated that the patient's mind had been growing gradually worse for the past fifteen years, and that she had been placed in the county home because her mother could no longer care for her. She ran away from home, knocked out window panes, and wandered all over the country. The anamnesis made no mention of unconscious attacks or convulsions.

The mental examination of the patient made a short while after her admission to the hospital readily revealed that she was of a low order of intelligence, and no doubt congenitally deficient. When she was admitted to the hospital there was a large bruise on her forehead, and it was learned from her that she had been having some form of falling spells for some time and that she had injured her head when she fell in one of the attacks. The nurse on the patient's ward described the attacks to the examiner as follows: "She appears to faint away, is apparently unconscious, cannot be aroused and occasionally rolls from her bed to the floor. She has not been seen to chew the tongue or froth at the mouth, nor was there any jerking of any of the muscles of

the body. She has passed her urine during the attacks."

The patient stated that she had fits when a baby, but that she had had no "spells" since then until one year ago. One year prior to her admission to the State Hospital, while she was in a general hospital for an abdominal operation, she had three fainting attacks. She had no more until the first of this year, when she began having fainting spells again. She had been having them almost daily until her admission to the hospital. She stated that she remembered nothing that happened during the attack and that some of the attacks lasted as long as twenty to thirty minutes, while others lasted for just a few minutes. She said there was no aura or other sensations before the attack. The only thing she knew was that she just felt weak and fainted away. She did say that sometimes after the attack her head ached, but that her mind was always as clear as usual after regaining consciousness.

The physical findings were essentially negative except for a slow pulse rate (60 per minute) and a blood pressure of 160 systolic, 100 diastolic. The heart was normal, and all the reflexes were essentially negative. The eye grounds were apparently normal. The blood studies, including a blood count, hemoglobin determination, blood bromide and blood Wassermann tests, were negative. The urine was also negative.

It was found that by pressure over the carotid sinus the above described attacks could be brought on. The right side of the neck seemed to be the most sensitive side. When the attack was brought on, her eyes would open wide, she would glance anxiously around the room, and had an appearance of uneasiness; breathing became labored, and she would fall over unconscious. The attacks would last sometimes for three or four minutes, sometimes for ten or fifteen minutes. During the time she was unconscious her breathing was very slow and shallow, her respirations dropped to 7 or 8 per minute, the pulse rate dropped from 60 to 40 per minute, the blood pressure dropped from 160 systolic, 100 diastolic to 130 systolic, 60 diastolic, the pupils were dilated and there was no pupillary action. In order to determine if this was a true carotid sinus manifestation 1/100 grain of atropine sulfate was given hypodermically. After a short while pressure was made over the carotid sinus and no attack could be produced. On

1. Stevenson: Use of Roentgen Therapy in Carotid Sinus Syndrome. J. Radiol., February, 1939.

another occasion, an attack was induced by pressure over the sinus, similar in all respects to others described. When unconsciousness was complete, 1/100 grain of atropine was given; she immediately awakened, looked around in a silly embarrassed manner for an instant, and seemed perfectly clear mentally. She had no recollection of anything which had occurred except that she recalled a sensation of just "fainting away".

Summary

1. Carotid sinus syndrome, in varying intensity, is a fairly common condition.
2. The symptoms vary from a mild feeling of faintness and flushing to complete unconsciousness and convulsive disorders.
3. It is a proven reflex, with the seat of peripheral stimulation being located in the carotid sinus of the carotid artery.
4. It is usually associated with arteriosclerosis or coronary artery disease, and most often occurs in later life.
5. Most attacks can be relieved by atropine, and the tendency to attacks can be prevented by daily administration of small doses of belladonna.

TINEA FAVOSA OF THE SCALP

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and

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Although in recent years several cases of tinea favosa of the scalp have been reported in native-born Americans⁽¹⁾ the number is relatively small when compared with the incidence of the disease in foreign-born Americans. Most of the cases reported among native-born Americans are in the offspring of foreign-born parents who have, or have had the disease⁽²⁾, and in many of the other cases there are known sources of infection—for example, relatives with whom there is contact. In view of the present accepted concept—that favus was probably unknown in the United States prior to the great influx

of immigrants during the expansion period of the country⁽³⁾—, any reports of cases in which there is no known contact with people either born in foreign countries or having near relatives born in other countries, are of interest. The case to be reported is, to our knowledge, the first published report of tinea favosa in a native-born North Carolinian. The main point of interest is the problem presented in the diagnosis of the disease. Although favus is rare, it probably often goes unrecognized, owing to the possibility of confusion with other diseases of the scalp, notably seborrheic dermatitis, psoriasis, and tinea amiantacea.

The following report is of a patient living in the eastern part of North Carolina, in whom no history of contacts with persons of foreign extraction was found.

Report of Case

M. J., a white female, 20 years of age, was born in Maysville, in Onslow County, North Carolina. Her father and mother are living and well. One brother, aged 26 years, has a "similar condition of the scalp". He was not available for study. Seven other brothers and sisters are all living and well, and all were reported free of any scalp diseases. The patient had never been married.

The patient was first seen at Duke Hospital with a surgical complaint on May 12, 1937. Because of a marked scaling of the scalp a dermatological consultation was requested and a tentative diagnosis of seborrheic dermatitis was made. An ointment of 6 per cent crude coal tar, 2 per cent salicylic acid, and 2 per cent sulphur in aquaphor was given, to be applied each night. After two weeks she was very much improved, and was not seen again until July 8, 1940, at which time she stated that the previous medication had only helped temporarily and that after a few weeks her scalp was "as bad as ever". One observer detected a "mousy" odor of the scalp at this time which suggested favus, and her history was reviewed. The patient stated that her scalp condition had started when she was about 8 years of age, and she remembered that her brother also was similarly affected. She usually managed to keep the scaling inconspicuous by the use of olive oil and salicylic acid, but it had never been completely eradicated. At no time had bleeding or pus formation been

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1. Barrett, C. C., in Arch. Dermat. and Syph. 33:126 (January) 1936.
2. Wende, G., in Cut. Diseases, p. 383 (October) 1896.

3. Andrews, C.: Diseases of the Skin, Philadelphia, W. B. Saunders, p. 571.



Fig. 1. Diffuse scaling of the scalp in tinea favosa.

observed, and the only symptom was moderate itching. The patient believed that her scalp had gradually become more involved each year.

The patient stated she had never lived or traveled outside the state of North Carolina, and that prior to her visit to this hospital she had never been more than a few miles from her present home. Her brother had never been out of this state as far as she knew, and during the past ten years he had been confined in the State penitentiary.

Except for a skeletal abnormality of the right femur due to an automobile accident, and the condition of the scalp, the physical examination was entirely negative. The temperature, pulse, and respirations were normal. There were no abnormalities of the finger or toe nails. The skin over the trunk, extremities, feet, hands, face, and neck was normal. The scalp was involved in a generalized scaly process. The scales were heavy and silvery-white in color (fig. 1). The individual scales were seen to be cup-shaped, and frequently were pierced by a long hair. No pus was evident, and when scales were removed by curettage, a dry granulating pit

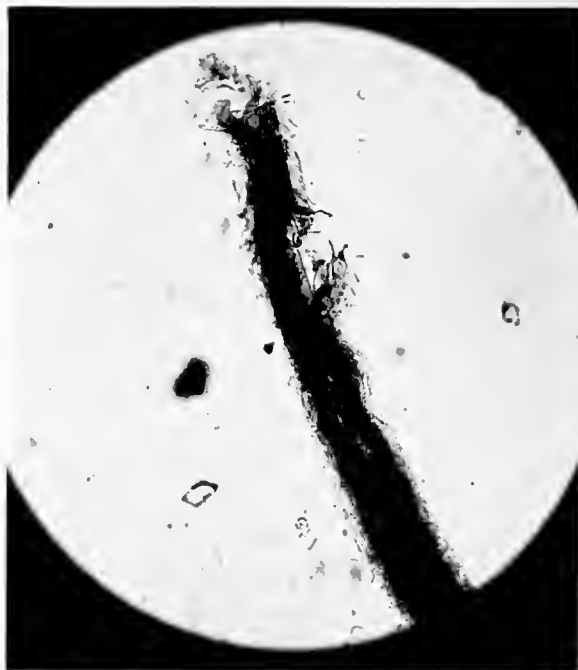


Fig. 2. Mycelial threads of *Achorion schoenleinii* invading the hair shaft.

was revealed in the scalp. A strong mousy odor was present. The hairs were generally long and not broken; they were dry, and the color was a dull grey.

The posterior occipital lymph nodes were moderately enlarged bilaterally.

The hemoglobin was 65 per cent, or 10 Gm. There were 3,300,000 red blood cells, and 7,800 white blood cells, with a normal differential count. The Wassermann and Kahn tests were negative. The urine examination was normal. Examination of hairs in 10 per cent potassium hydroxide solution revealed a fungus infection characteristic of *Trichophyton (Achorion) schoenleinii*. The hair shafts were invaded by mycelial elements, among which were seen numerous air bubbles (fig. 2). Examination of the scales in 10 per cent potassium hydroxide solution showed them to be infected with the same fungus. Hair and scales were cultured on July 9, 1940, and *Trichophyton (Achorion) schoenleinii* obtained.

The scalp was treated with 2½ per cent salicylic acid and 2½ per cent ammoniated mercury in soft soap. This was applied each night and the head was shampooed the next morning. At the end of two weeks the scalp was free of scales. The patient was then given epilating doses of x-ray to the scalp and was discharged. After epilation was

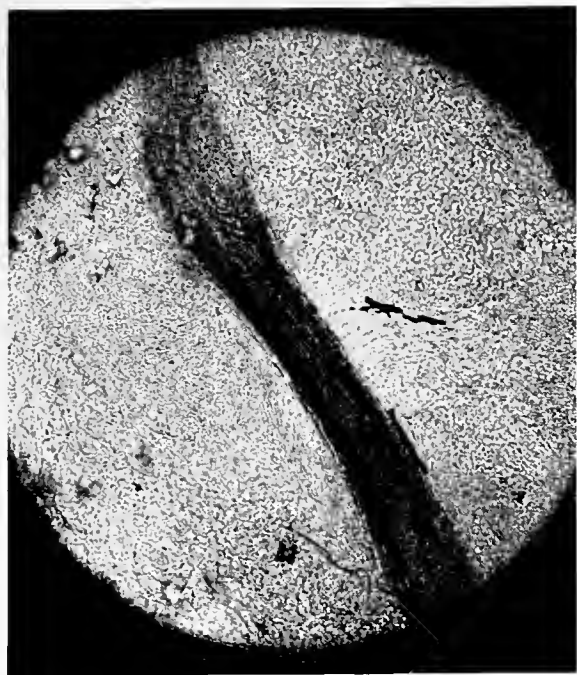


Fig. 3. The dark lines in the hair shaft are air spaces left by the invading organisms.

complete 5 per cent ammoniated mercury ointment was rubbed into the scalp each night and morning. Three months after epilation, when she was last heard from, her hair was returning and no new scaling was reported.

Laboratory Diagnosis of Tinea Favosa

The establishment of a diagnosis of any mycotic skin disease depends upon the demonstration of the fungus in the infected material from a skin lesion, and the culture of the fungus upon a suitable medium. Epilated hairs and scales from the scalp were placed in a drop of 10 per cent potassium hydroxide solution on one end of a glass slide, and a cover slip was placed over the material. This preparation was heated gently over a low flame of a bunsen burner, and the material was allowed to clear for a few minutes. Microscopically the scales revealed numerous branching mycelial threads, some of which were broken. Microscopically the hair shaft was seen to be invaded, and the fungus (endothrix) was found to be more numerous in the region of the follicle. It appeared as long parallel mycelial elements extending longitudinally in the cortex of the hair. Interspersed among the mycelial threads were numerous air bubbles and longitudinal air shafts which appeared as dark lines (fig. 3). This appearance of the



Fig. 4. Twenty-one day old culture of *Achorion schoenleinii* growth at room temperature on Sabouraud's media.

infected hairs was characteristic of a *Trichophyton* (*Achorion*) *schoenleinii* infection.

Infected hairs and scales were placed upon Sabouraud's glucose-agar slants, and the cultures maintained at room temperature. The colonies were slow growing, smooth (lacking aerial mycelium), and irregular in outline; later they became heaped up, folded, and brownish in color. Upon transfer, however, a short, nap-like, white aerial mycelium appeared over the surface of the colonies, and the brownish color of the original cultures was not noticeable (fig. 4). Microscopically the culture was composed of septate, branching mycelium, characterized by numerous swollen areas (chlamydospores) and the typical favic "chandelier". The gross cultural appearance of the fungus on Sabouraud's glucose-agar slants, and the microscopic morphology was typical of that for *Trichophyton* (*Achorion*) *schoenleinii*.

Treatment

The infection of favus penetrates down into the hair follicles to the papillae. This makes treatment difficult. Ordinary topical remedies, such as lotions and ointments, can-

not penetrate to this depth. The hairs in infected areas must be removed. Shaving the scalp will not remove the infected hair roots. Two methods are commonly used: mechanical forceps epilation, and epilation by roentgen-ray therapy. Mechanical epilation of the hairs, even under a Wood's filtered lamp, which causes the infected hairs to appear fluorescent, is not satisfactory. Infected hairs are constantly infecting adjacent hairs, and there is considerable danger of infection to the operator. Such a procedure in most instances would take months of painstaking work. For this reason roentgen-ray epilation is recommended. In the hands of an experienced roentgenologist this method of epilation of the scalp is rapid and safe, and the entire scalp is epilated at one time. It requires about fourteen to eighteen days after roentgen-ray therapy for the hair to fall out, and there will be a regrowth of downy hair about one month later. During this period of total alopecia 5 per cent ammoniated mercury in petrolatum, or 25 per cent iodine crystals in goose grease should be rubbed in daily. When the new hairs return careful examination for infected hairs should be made by means of a Wood's filtered lamp, and any suspected hairs pulled out. The topical treatments should be continued regularly for at least another month. Roentgen-rays do not in themselves destroy the organism, although the fungus may be inactivated to a degree⁽⁴⁾.

Should this vigorous therapy fail to control the infection, a second epilation of the scalp may be done six to nine months later, and the same procedure followed. It is inadvisable to epilate by means of the roentgen-ray more than twice, as there is danger of total and permanent alopecia. Dermatologists in general do not advocate the use of thallium acetate by mouth to cause the hair to fall out, as the possible toxic effects of the drug have not been thoroughly studied.

Discussion

Ample proof of the infectiousness of favus exists in the reports of epidemics of the disease in Europe. It has been carefully studied in Italy, Poland, and neighboring countries⁽⁵⁾. It is recognized that the disease is most often associated with poverty and

dirt. It is known to occur at the time of the wheat harvest in Australia, when large numbers of mice plague the area⁽⁶⁾. The association of these two facts lends some support to the view that favus may be spread by household rodents which are hosts to the fungus. At least 95 per cent of human cases of favus are reported to be caused by *Trichophyton (Achorion) schoenleinii*; the cases known to be due to mice were caused by *Trichophyton (Achorion) quinckeanum*⁽⁶⁾.

There has been no satisfactory explanation for the cases reported from isolated areas in Kentucky, Arkansas, Tennessee⁽¹⁾, and in this state. Apparently in most of the reports the patients lived in poverty stricken districts. The patient herein described was supported by local welfare agencies.

In its early stages favus may be confused with the common "ringworm" of the scalp, *tinea capitis*, most often due to infections with *Microsporum audouinii* or *Microsporum canis*⁽⁷⁾. As a rule favus begins as a slightly raised erythematous patch which soon forms an overlying crust of whitish-yellow color. As the crust ages the center becomes depressed, forming the cup-shaped scale, or scutulum, so typical of *tinea favosa*. The spread is commonly by direct extension, the encrusted area slowly enlarging to form larger patches. As in common "ringworm" of the scalp, the area tends to be free of hair, but in favus those hairs remaining are long and dry, showing loss of color. They are not the characteristic broken-off stubby hairs of common "ringworm". Both diseases show a loss of hair at the onset, but persistent alopecia with scarring is the rule in favus. The onset of *tinea favosa* and other tineas of the scalp is usually in young children, rarely infants or adults, but favus may and usually does persist long after puberty. It has been known to last for forty years or more⁽⁵⁾, whereas in the common *tinea capitis* it is the rule for the disease to disappear spontaneously at puberty. *Tinea favosa* that has existed for long periods is generally considered quiescent, although it is definitely known to be quite contagious. Cases have been reported in which grandparents, after having had the disease thirty years or more, have infected their grandchildren. The chronicity of the disease is its real danger, as it causes dispersion of the disease, as well

4. McCarthy, L.: Diseases of the Hair, St. Louis, C. V. Mosby Co., 1940.

5. Bushe, Langer, and Peiser, in Urol. and Cutan. Rev. 30: 449, 1926.

6. Paul, Norman, in Brit. J. Dermat. 48:247 (May) 1936.

7. Lewis, G. and Hopper, M.: Introduction to Medical Mycology, Chicago, Year Book Publishers, Inc.



Fig. 5. Tinea favosa of the scalp. This may be easily confused with psoriasis and other scalp conditions.

as the disfiguring scarring seen in cases of long standing. It is in such cases that both the patient and the physician are led to believe that the disease is probably an incurable "eczema" or psoriasis (fig. 5).

In addition to the foregoing symptoms, an odor described as the odor of the urine of mice is so characteristic that it may often lead to the diagnosis of favus, but confirmation by laboratory study must be had before intensive therapy is started. Besides affecting the scalp, favus lesions may appear on other areas of the skin. These appear as discrete encrusted lesions similar to discrete lesions seen in the scalp. The scales are yellowish in color and are adherent to the underlying skin. As the lesion enlarges, the center shows a tendency toward healing, leaving a scar. When sensitivity to the infection is increased a widespread papular eruption may occur, termed a favid. This is similar to other bacterial and mycotic "ids" and does not respond to therapy until the primary focus of the infection is healed—at which time the favid heals spontaneously.

Summary

The possible difficulties encountered in the diagnosis of tinea favosa, or favus of the scalp, are considered, and a case of the disease in a native-born North Carolinian is reported. There was no known contact with foreign-born persons, but a brother of the patient has a similar condition of the scalp. The duration of the disease is twelve years. Methods of diagnosis and treatment are discussed.

OVARIAN DERMOID CYST AS A CAUSE OF RENAL DISPLACEMENT AND HYDRONEPHROSIS

Case Report

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and

L. W. OEHLBECK, M. D.

Grace Hospital

MORGANTON

A white female, 16 years of age, was admitted to Grace Hospital on December 16, 1940, complaining of distention of the abdomen.

For the past three years the patient had noted gradual enlargement of the abdomen, which had become worse in the last four months. Her classmates at school thought she was pregnant. Lately she had noted some shortness of breath on exertion, and, during the past two months, some edema of the legs which disappeared during the night.

Previous to this admission, the following x-ray studies had been done by one of us (L. W. O.):

On December 10, 1940, an anteroposterior study in the supine position was made, and the following report was given:

"The rather general marked increase in radio-opacity of the abdomen appears characteristic of ascites. This direct abdominal study shows very significant findings on the right side, where there is complete obliteration of the psoas muscle border. It is difficult to outline the kidneys, but the right kidney appears elevated. In addition there is a small calcified area just lateral to the intervertebral disc in the lumbar area; this has sufficient density to be considered as a possible renal calculus."

On December 11 excretory pyelographic



Fig. 1. Pre-operative excretory pyelogram, showing marked elevation of the right kidney, with the pelvis about opposite the level of the twelfth dorsal body. A rather pronounced hydronephrosis is apparent.

studies were made, with the following findings:

"This study shows conclusively that the right kidney is considerably elevated and that there is a rather marked degree of hydronephrosis. The opacity seen in the initial examination of the abdomen is definitely not in the renal area. The right kidney concentrates the dye slowly and the dye may be seen for a forty-five minute period. From this study it is also evident that there is probably a large retroperitoneal mass causing compression of the psoas muscle on this side, elevation of the right kidney, and compression of the right ureter. The left kidney appears to show normal function."

On December 12 a serial gastro-intestinal study was done, and the report was as follows:

"This serial examination of the intestinal tract reveals marked upward displacement of the stomach and the duodenum, and lateral displacement to the left of the jejunum and ileum. The cecum is markedly elevated, but is not displaced anteriorly.

Conclusions: This examination of the abdomen would appear to be indicative of a retroperitoneal type of tumor, causing

marked upward displacement of the right kidney and of much of the intestinal tract. The pronounced hydronephrosis on the right would appear to be due to extrinsic pressure on the ureter from the tumor mass."

The family history was non-contributory, and the individual history was negative. Menses started at the age of 14, and had been regular, every twenty-eight days, lasting four days. Physical examination revealed a 16 year old, white female, lying flat in bed. There was a slight shortness of breath. The pulse was 94 on admission; respirations, 28; blood pressure, 115 systolic, 78 diastolic. Examination of the eyes, mouth, and neck was negative. There was no sign of thyroid enlargement. The heart was regular in rate and rhythm, with no murmur or thrill. The apical impulse was in the fifth intercostal space inside the midclavicular line. The lungs were clear and resonant throughout, except for slight dullness to percussion at both bases.

The abdomen was enlarged to the size of a full-term pregnancy. There was some shifting dullness on percussion, and a soft, symmetrical tumor, which was movable. No fetal heart tones were present. The uterus was small, and, as far as could be ascertained by pelvic examination, the mass in the abdomen was not attached to the uterus. The left ovary was normal on palpation. A satisfactory examination could not be done because of a natural intact hymen.

Extremities: The reflexes were present and equal. Edema of the legs beneath the knees was noted.

The following laboratory findings were noted: The red cell count was 4,040,000, the hemoglobin, 100 per cent; the leukocyte count was 9600, with 64 per cent polymorphonuclears, 24 per cent small lymphocytes, 4 per cent large lymphocytes, 2 per cent eosinophils, and 2 per cent basophils. The blood Wassermann test was negative. The specific gravity of the urine was 1.015; there was an occasional red blood cell, no sugar, and no albumin.

On December 17 a paramedian incision was made which disclosed a large mass filling the entire abdomen. The ascending colon and cecum were pushed up high, and practically all the small intestines were lying in the left wall of the abdomen. The pedicle was easily found attached to where the right ovary should have been. A purse string suture was placed and a large ovarian cyst



Fig. II. Excretory pyelogram one month after removal of a large ovarian dermoid cyst. The right kidney has returned to its normal bed, with the pelvis about opposite the level of the fourth lumbar body. A considerable reduction in the degree of hydronephrosis is evident at this time.

was tapped with the trocar and fluid was removed gradually. Fat and hair were present in the cyst. The growth was later reported as a dermoid cyst. The pedicle was clamped and cut. The incision was enlarged to remove the tumor mass. An incidental appendectomy was done. The right kidney was palpated and found to be enlarged.

The patient's recovery was uneventful.

Diagnosis: Ovarian dermoid cyst.

Comment

Renal displacement from an intraperitoneal tumor has always been regarded as extremely rare, some authors stating that it never occurs. It was present here to such a marked degree that before the examination of the large bowel was made it appeared that there was no other serious possibility than a retroperitoneal neoplasm.

A re-examination of the right kidney one month following operative removal of the large ovarian dermoid cyst showed it to be in normal position. Excretory pyelography revealed marked reduction in the degree of

hydronephrosis. The opacity seen over the right renal area in the original study represented calcareous material in the dermoid, and was removed with it. It is noteworthy that there was never any interference with the normal menstrual cycle.

THE MEDICAL AND HOSPITAL FACILITIES AVAILABLE TO CHILDREN IN NORTH CAROLINA

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The reduction of deaths in children, the object of this Conference, can be, and is being accomplished in three ways: (1) By the provision of adequate medical and hospital facilities for the treatment of children; (2) by the increased utilization of these facilities through public education and charity; and (3) by the elimination of many diseases through preventive pediatrics.

Facilities

In North Carolina, in 1936, the ratio of physicians to the population was 1:1,284 in contrast to the national figure of 1:719⁽¹⁾. However, through the three medical schools, the number of physicians locating in North Carolina is increasing. Of the 2,740 physicians in North Carolina, 1,200 are general practitioners and only 40 are pediatricians. Of the 3,571,623 population of the state, approximately 900,000 are children (a ratio of 1:4). As there are 22,500 children per pediatrician, and 750 per general practitioner, obviously the majority of children in North Carolina, as in other parts of the country⁽²⁾, are cared for by general practitioners and not by pediatricians.

In 1936, the North Carolina population per approved hospital bed was 1,837, compared to 419 for the country as a whole. If unapproved hospitals are included, the respective figures are 212 and 107⁽¹⁾. As a result of the assistance by the Duke Endowment, the number of hospital beds is growing. Last year, the ninety North Carolina

Presented at the North Carolina Conference on Children in a Democracy, Raleigh, February 6, 1941. From the Department of Pediatrics, Duke University School of Medicine and Duke Hospital, Durham.

1. Davison, W. C.: A Survey of Medical Education in the South. Address at the Inauguration of Oliver C. Carmichael as Chancellor of Vanderbilt University and a Symposium on Higher Education in the South. Nashville, Tenn., Vanderbilt University (February 4) 1938.
2. Council on Medical Education and Hospitals of the American Medical Association: Medical Education in the United States, 1934-1939, A.M.A., Chicago, 1940.

hospitals provided over a million and a half patient-days of hospital care, approximately 14 per cent of which were for children, and 8 per cent for maternity cases. Assisted by the North Carolina State Board of Health and the Children's Bureau, 190 prenatal and well-baby clinics are being conducted one or more times each month in sixty-two of the one hundred counties.

Utilization

The question of whether these facilities are adequate cannot be answered until they are used by a larger proportion of the population. The utilization of hospital beds has risen rapidly since the establishment of the Duke Endowment in 1925 and the Hospital Care and Hospital Saving Associations in 1933; last year, however, 34 per cent of the hospital beds were unoccupied. Inadequate facilities and poverty are not the only reasons for failure to obtain medical service. That the lowest economic third of the public receives the least medical care and has the most illness⁽³⁾ often may be due to the fact that this group does not realize that adequate medical care is necessary, and does not know that medical facilities are available. The fact that 19 per cent of the pediatric deaths in 1937 in North Carolina occurred in children who were not under the care of physicians is as likely to be due to the ignorance of their parents as to poverty or lack of medical resources. Among 10 diphtheritic patients treated at Duke Hospital during one month, 8 were not seen by physicians for an average of five days after the onset, and, of 9 other children suffering from diphtheritic paralysis, 7 were not taken to physicians until the onset of paralysis⁽⁴⁾. The parents had not realized the possibility that a "sore throat" might be diphtheria. Yet diphtheria antitoxin is supplied at cost by the State Laboratory, and is given free in many counties.

In Durham County, which is typical of most American counties, the medical profession, the infant feeding clinics, the health department, the county physician, and the Watts, Lincoln and Duke Hospital Clinics can provide the necessary preventive and therapeutic measures, regardless of the poverty of the patient, if the public is made aware of their necessity. In spite of these

facilities, fifty-six of the one hundred counties in North Carolina have a lower infant mortality than Durham, and forty of the forty-eight states have a lower death rate in infants than North Carolina. To teach the public to use these present medical resources, the Durham-Orange County Medical Society recently has authorized a series of unsigned newspaper articles on preventive pediatrics, calling attention to the unnecessary deaths, and to the means of preventing them. Syndicated medical articles have made remarkable progress in educating the public, but obviously they cannot reach those who do not read the newspapers⁽⁵⁾.

Education of the Public

National, state, county and city advertising campaigns in newspapers, busses, billboards, and radio, and through churches, schools, the Parent-Teachers' Association, the American Legion, etc., on the necessity for prenatal, natal and postnatal care, and on the medical facilities available, conducted by publicity experts employed by county and state health departments, are necessary to reach more of the population. If, through advertising, a public demand can be created for automobiles, electric refrigerators, cigarettes, and patent and home medicines (which represent 14 per cent of the present medical costs⁽⁶⁾), cannot the people be taught to seek adequate medical service? Better pediatric and obstetric care and a lower infant and maternal mortality can be obtained with a smaller amount of money by teaching the public to utilize the present medical facilities than by providing additional medical resources, which the public still must be taught to use. After an educational program has produced a demand for more medical care, the medical services can be extended as they are needed. The public gets the product it demands, whether it is medical care or a nationally advertised variety of tooth paste⁽⁵⁾.

Charity

Charity, the greatest of the biblical virtues, of course is necessary, but only after investigation by social service or welfare departments. Charity is the most abused virtue in medicine. The average physician and hos-

3. National Health Conference, J.A.M.A. 111:432-454 (July 30) 1933.

4. Arena, J. M., and Rasmussen, L. P.: Diphtheritic Polyneuritis, J. Pediat. 18:352-356 (September) 1933.

5. Davison, W. C.: The Future of American Pediatrics, J. Pediat. 14:810-814 (June) 1938.

6. Rorem, C. R., and Fischelis, R. P.: The Costs of Medicines. Publications of the Committee on the Cost of Medical Care, No. 14, Chicago, 1932, University of Chicago Press, p. 18.

pital do at least one-third of their work for nothing. Unfortunately some of this charity goes to those who do not need it. The public, or at least a large share of it, regards the medical profession and hospitals as it does the customs officials and income tax collectors. It withholds as much financial information as possible and considers cheating as legitimate gain, if undetected. It seems to glory in getting something for nothing. A few years ago a well dressed man entered Duke Hospital with the statement that he had heard that Mr. Duke had left four millions for charity and that he had come to collect his share. Soon after it opened, the hospital found that over 90 per cent of the patients were not paying anything, and F. Vernon Altvater, the superintendent, clearly demonstrated that most of them could pay something, though usually not the full cost. He therefore notified the public that thenceforth no free patients would be admitted, but that, if the patients' friends, church, lodge, or county welfare department would pay half the cost, Duke Hospital would furnish the balance, in accordance with Mr. Duke's plan that the Duke Endowment and the counties should share the charity load. Nearly all of the counties are now cooperating with this plan. Seventy-two per cent of the patients pay less than cost, but by having them contribute in accordance with their means, Duke Hospital, with the same amount of money, now is helping 13,000 patients annually to be treated instead of giving complete charity care to 4,000. The patients who need charity care are getting it; for their cases have been investigated by their home folks who are putting up half the cost. The extension of social service and welfare facilities will help greatly in solving this charity problem by distinguishing between the needy and the deadbeats, and also by arousing local interest in the care of the indigent sick. The counties should know their poor and should help in providing medical and hospital care for them. As long as the physicians and hospitals carry the load without murmuring, the public will let them, and will abuse the privilege.

Preventive Pediatrics

Whether the cost is borne by taxation, private fees or local charity, prevention is the most important phase of pediatrics and should be extended both by general practitioners and by pediatricians. "He who cures

a disease may be the most skilful, but he who prevents it is the safest physician." Three-fourths of the quarter of a million annual deaths of American children⁽⁷⁾ can and should be prevented! Twenty-one per cent of these deaths are due to curable diseases, while 56 per cent are caused by preventable conditions⁽⁸⁾.

During the past twenty years, the mortality among children has decreased 66 per cent⁽⁹⁾. In 1920, one-fourth of all deaths were among children, but today the ratio has fallen to one-eighth. That this decrease is not entirely due to the falling birth rate⁽¹⁰⁾ is indicated by the fact that during this same period, the ratio of children to the total population fell only from 1:3 to 1:4. The need for the hospitalization of sick children should eventually decrease, as diphtheria, whooping cough, dysentery and typhoid fever become rarities; as pneumonia and meningitis are treated at home with sulfa-pyridine or other drugs; as congenital syphilis decreases through the expansion of the program for treating adults; and as nutritional problems are eradicated by the simplification of infant feeding and the dissemination of information on nutritional requirements.

The necessity for greater emphasis on preventive pediatrics in this state is illustrated by the fact that although free toxoid is supplied and its usage is required by the North Carolina State Board of Health, diphtheria is responsible for 7 per cent of the illnesses of children in Duke Hospital, and that deaths from this disease per 100,000 population are fourteen times higher in North Carolina than in New York. Contrast that picture with the record of Toronto, Canada, without a single case of diphtheria in 1940. Toronto's success is due not to any compulsory laws, but to high-powered public health propaganda. For the last ten years, the health workers have persuaded the parents of every newborn baby to have the child immunized at the age of six months. Toxoid injections also are given to all school children. To date

7. Mortality Statistics, 1927-1933, Part I, Tables and General Tables. U. S. Dept. of Commerce, Bureau of the Census.
8. Davison, W. C.: Preventive Pediatrics, J.A.M.A. 114:742-746 (March 2) 1940.
9. Cooper, G. M.: "In 1919, North Carolina with a population of two and a half million had 10,864 deaths in children under 15 years of age, while in 1939, although the population had increased to three and a half million, the deaths in children had diminished to 6,725." (Personal communication)
10. Cooper, G. M.: "The birth-rate in North Carolina, which was 29.3 per 1,000 population in 1919, fell to 22.6 in 1939." (Personal communication)

80 per cent of the city's school children have received this protection.

The importance of preventive pediatrics cannot be overemphasized, and it is in this field, as well as in practice, that pediatricians will always be needed.

RELATIONSHIP OF RACE TO THE INCIDENCE OF DIPHTHERIA AND OF POSITIVE SCHICK, TUBERCULIN AND WASSERMANN TESTS IN HOSPITALIZED CHILDREN

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The statement often has been made that diphtheria is less frequently seen in colored than in white children, and that the reverse is true of tuberculosis and syphilis. Is this race variation due to a difference in susceptibility, or to greater exposure from the overcrowding and poor living conditions of the colored children; or are the milder cases of diphtheria overlooked? In an attempt to answer this question, the incidence of diphtheria and the percentages of positive Schick, tuberculin and Wassermann tests of the white and colored children admitted to Duke Hospital from 1932 to 1939 were tabulated (table 1). As these children, who came from practically every county in North Carolina, were hospital patients, the figures may not be an accurate index of the incidence of diphtheria, tuberculosis and syphilis; yet they are similar to the death rates from these diseases in children throughout the state (table 2).

The incidence of clinical diphtheria in the colored children in this series is 69 per cent of that in the white children (table 1), and the susceptibility to diphtheria in the colored children is 75 per cent of that in the white children (table 1). These percentages are so similar that it would seem that the lower incidence of diphtheria in colored children is due to their lower susceptibility rather than to the overlooking of mild cases. That the death rate from diphtheria in colored children is only 48 per cent of that in white children (table 2) also may be due to this ap-

TABLE 1
Relationship of Race to the Incidence of Diphtheria and of Positive Schick, Tuberculin and Wassermann Tests (1932-1939)

	White Children	Colored Children
Cases of Diphtheria	(1261 Patients) 63, or 5.2%	(518 Patients) 18, or 3.6%
Positive Schick Tests	(1644 Patients) 253, or 15.4%	(642 Patients) 85, or 11.6%
Positive Tuberculin Tests	(1751 Patients) 90, or 5.1%	(684 Patients) 95, or 13.8%
Positive Wassermann Tests	(1196 Patients) 12, or 1%	(496 Patients) 39, or 7.8%

TABLE 2
Mortality Statistics in North Carolina for 1938 (From Birth to 14 Years)

	White		Colored	
	Total	Per 100,000 Population	Total	Per 100,000 Population
Diphtheria	143	5.8	28	2.8
Tuberculosis (All Types)	33	1.3	75	7.5
Syphilis	27	1.	92	9.2

parently lower susceptibility, although undiagnosed cases cannot be excluded as an explanation.

The incidence of tuberculous infections, as evidenced by positive tuberculin tests, in the white children in this series is 37 per cent of that in the colored children (table 1), and the death rate from tuberculosis in white children in the state is 17 per cent of that in colored children (table 2). These lower tuberculosis figures in the white children probably indicate a lower susceptibility to tuberculosis, although they also may be explained by a lower rate of exposure.

The incidence of syphilis in the white children in this series is 13 per cent of that in the colored children (table 1), and the mortality from syphilis in white children in the state is 11 per cent of that in colored children (table 2). These lower syphilis figures in the white children probably are due to a lower rate of exposure to syphilis, although a lower susceptibility also may be the cause.

The rapid decline in tuberculosis mortality rates has been due mainly to lessening in the incidence of infection. Among those infected, the toll, though diminished, is still appalling. Mortality statistics, morbidity reports, autopsy examinations, tuberculin tests and x-ray surveys indicate that about half of all infected individuals develop clinical tuberculosis, and that from 10 to 20 per cent of them eventually die of the disease. The high risk of disease and death due to infection by the tubercle bacillus justifies increased efforts for its prevention. Emil Bogen, M.D., *Amer. Rev. of Tuber.*, August, 1940.

THE PINWORM AND THE APPENDIX

W. C. THOMAS, M. D.

and

ROBERT P. MOREHEAD, M. D.

WAKE FOREST

The pinworm, *Oxyuris vermicularis*, is one of the most common of the parasites encountered in daily practice. As its name indicates, it is pin-sized, measuring about .5 to 1 cm. in length, and is grayish-white in color. If a warm stool is examined, these actively moving worms may be discovered without difficulty. Infection results from ingestion of the eggs found on fecal contaminated objects which are brought into the mouth. The egg matures in the small intestine, but the adult stage is passed in the colon. The female worm crawls out of the anus to deposit its eggs on the perianal skin. In so doing, it gives rise to the clinical manifestation, pruritus ani, which usually leads one to suspect the presence of these parasites.

The literature, particularly that of foreign origin, contains numerous reports in regard to the occurrence of worms in the appendix. There is, however, marked difference of opinion as to the frequency of occurrence and as to the relation to the etiology of appendicitis. Since we were of the opinion that the frequency varied in different sections of the country and that in many cases the pinworms were overlooked, we began a study to determine the frequency in this state. The statistics presented were obtained in studying one thousand appendixes in our surgical pathology laboratory since January 1, 1941. All of the appendixes came from hospitals in various sections of North Carolina.

Method of Study

Because of the obvious possibility of error by examination of microscopic sections alone, three methods of study were employed. The appendix was first examined grossly. Sections were next taken from various portions of the appendix for microscopic study. Finally, the remaining portions and the con-

tents of the lumen were examined for evidence of parasites in the sediment.

Incidence

Fifty-two appendixes (5.2 per cent) contained the *Oxyuris vermicularis*. The number of parasites in each appendix varied from one to twenty-five.

Age

The youngest patient was 3 years of age, the oldest, 47; the average age was 16 years. It is of interest to note that the majority of patients above 30 years of age had their appendixes removed secondarily to other intra-abdominal operations.

Race

Thirty-two of the patients were white and twenty were colored.

Sex

It is striking to note that forty-two of the patients were females, while only ten were males.

Clinical Symptomatology

Thirty-five of the patients complained of abdominal pain, nausea and vomiting of an acute type. In seven of the cases there was only chronic abdominal discomfort. In eight instances the appendix was removed in the course of an operation primarily done for the correction of other abdominal pathology, usually fibromyomata or pelvic inflammatory disease.

Pathological Findings

Gross: The typically involved appendix was without evident change except for distention of the lumen. The worms occupied a position adjacent to the mucosa and on the outer surface of the feces. The male worm is small and transparent and may easily be overlooked even on close inspection. The intraluminal contents become dislodged without difficulty. This explains why the worms are often not seen in microscopic sections when they are present in the gross.

Microscopic: Thirty-six appendixes showed lumen distention without evident inflammatory change in the wall. Six appendixes showed diffuse acute inflammatory involvement. Fibrosis was found in ten of the cases.

Conclusions

1. Five and two-tenths per cent of appendixes examined in routine surgical pathology were found to contain *Oxyuris vermicularis*.

2. Females were affected four times as frequently as males in this series.

3. Clinically the presence of pinworms in stools in cases of acute abdominal pain does not mean that the patients may be treated merely for oxyuriasis. The appendiceal symptoms must be accorded a full share of attention. Eighteen per cent of the worm infested appendixes showed an acute diffuse reaction.

4. The clinical symptomatology and the pathologic picture in oxyuriasis of the appendix are not compatible in the great majority of cases. Further physiopathologic studies of the problem are indicated.

INJURIES SEEN IN WAR AND PEACE

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LINCOLNTON

With the thousands that are being maimed, crippled and killed as a result of war in European countries, and with the increasingly large numbers of citizens injured in our industries and on our highways, a consideration of injuries seen in war zones and in civil practice, and of their relationships and differences, seems timely.

In the earlier days, many surgeons received most of their training in wars. This training and experience enabled them to minister more efficiently to those injured in civil life. This condition still prevails today. Lessons learned have varied with the periods, because weapons and tools of destruction have been constantly changing. In the early days of fighting in this country, the soldier's wounds consisted of those inflicted by the bow and arrow, the sword, and the single ball shot, whether from rifle or cannon. Each of these produced what might be termed much more streamlined injuries than those received in combat in the twentieth century. In bygone days, it was fashionable for the veteran to display his wounds only on the front of his body, but it is not so any more. With the present multiple and varied weapons of warfare, the soldier of today can without apology display wounds on any and all parts of his body.

Presented to the Seventh District Medical Society, Kannapolis, November 20, 1940.

Injuries seen in civil practice have also become more extensive—mainly as a result of the machine production in our industries, the good roads of our country, and the high-powered automobile.

In addition to injuries received on the battlefields, there has been introduced another angle of wounds in war. The civilian injuries in battle zones mount with each new war, as a result of the use of airplanes and highly mechanized machinery. From the same cause the actual percentage of soldiers killed and wounded is decreasing in these spectacular theatres of war.

Defenses Against Injury

With the increasing severity of injuries in war zones and in civil life, there must be some counteracting force, some means of protection, in part at least. What are our defenses, and of what does our body armor consist?

The first and most important defense is the physical stamina of the population. Cooper⁽¹⁾ very ably called attention to this fact when he reviewed the enormous accomplishments of Japan and Germany in their program of physical training from infancy, which is far ahead of anything in this country. It is of interest to recall that 51 per cent of our draft army in the first World War had some physical defect, and that 29.1 per cent were unfit for military service. Captain Leone⁽²⁾ of the Army Medical Corps reports the rejection of 32.5 per cent of volunteers, owing to physical defects. Kessler⁽³⁾, in discussing physical fitness, reports that in an examination of over 6000 industrial workers only seven per cent were found to be free from any gross defect. Have our standards for physical judgment been raised, or have we, in our haste for financial and industrial supremacy, lost sight of our physical stamina goal, and become weaker instead of stronger physically? The statistics from the coming selective service should be of considerable interest to us. The healthier any individual is at the time of receiving any type of injury, the greater damage he can withstand, and the more reserve he will have to overcome any complications which may develop.

1. Cooper, G. M.: Editorial, North Carolina Health Bull. 55: 3-4 (August) 1940.

2. Leone, George E.: Causes for Rejection for Entrance Into the Regular Army Due to Physical Defects, J. A. M. A. 115:1285-1284 (October 12) 1940.

3. Kessler, Henry H.: The Determination of Physical Fitness, J. A. M. A. 115:1591-1594 (November 9) 1940.

In addition to this natural resistance, we have other weapons of defense represented by the vaccines. It has been shown that gangrene is much more likely to develop in an individual with tuberculosis, typhoid fever, or malaria. The majority of our population is vaccinated against typhoid and smallpox, and there is being developed now a method of preventing malaria among soldiers in the malaria-infested areas.

Tetanus toxoid has also come forward in the last few years as a prophylactic. Some of the army units in Europe today have had immunizing doses of toxoid. It is being tried out here and its use in hazardous employments is being urged. With the advent of the sulfonamide group of drugs we have still another defense⁽⁴⁾.

Infection

In spite of these potent defense forces, our results in treating wounds are sometimes disappointing, owing to some complication. The most frequent complicating factor is infection. The time elapsing between the receiving of an injury and the institution of proper treatment has a direct relation to the seriousness of infection. For an infection to develop in any portion of the body, sufficient pathogenic organisms of sufficient virulence have to be introduced over a sufficient length of time to produce tissue changes. That word sufficient is the variable factor.

In a so-called clean wound, where there is no injury except in the tract of penetration, organisms do not enter and produce tissue change in less than six hours. We feel that, under that time, the wound can be cleansed by mechanical means, for there has not been sufficient growth and entry of organisms that cannot be easily reached. If, however, there is additional cell trauma and reduced blood supply to the surrounding tissue, with a weakening of the home guard forces, bacterial penetration and reproduction will be more rapid.

In areas where infection is suspected, treatment must be instituted promptly. Many writers have shown that infection sets in earlier in abdominal and thoracic wounds than in any other portion of the body. In a series of abdominal wounds which were operated on and closed without drains, the results were as follows:

Of those operated on within four hours, 60 per cent recovered.

Of those operated on within six hours, 50 per cent recovered.

Of those operated on within eight to twelve hours, only 10 per cent recovered.

Most injuries that are seen after six hours can be classed as infected, since there is already an established bacterial invasion; therefore, no complete closure should be attempted.

Of the many bacteria which may cause infection, I shall mention only the two most important. The first is the hemolytic streptococcus. It was estimated that this organism caused 79 per cent of all deaths from infected wounds in the World War, by producing erysipelas, cellulitis and septicemia. I am sure that this organism likewise predominates in peace time infections. The other great offender is the anaerobic organism, *B. Welchii*, and other associated anaerobes.

Treatment

The detailed treatment of injuries is far too extensive to be covered in this discussion. I would like to call your attention to a few of the most important general principles relating to first aid, hemorrhage, shock, and infection.

Victims of automobile accidents who are brought into the hospitals have often been rushed over bumpy roads by any makeshift means of transportation, with anxious friends constantly shaking or disturbing persons who are unconscious or semi-conscious from head injuries. We frequently see badly fractured extremities which have been moved or allowed to dangle, with continued damage to soft tissue and vital structures, or serious loss of blood from some area where bleeding could be easily controlled. This condition, to a certain extent, is being corrected by the Red Cross, in its establishment of trained first aid crews at selected filling stations on the highways of our country.

I think the physician is at fault sometimes in not giving the proper preliminary preparation to these injuries before beginning repair processes. An important factor in the healing of a dirty wound is the removal of potential infective sources. Scalp wounds are very hard to cleanse properly, and the first important item is to shave the scalp extensively. This is never done too thoroughly, and is quite often done too sparingly.

4. Johnson, Robert W.: Chemotherapy in the Prevention of Infection in Compound Fractures, *Am. J. Surg.* 49:195-200 (July) 1940.

With a very extensive wound a general anesthetic is indicated. Sterile gauze, soaked in olive oil and immediately thrust into the laceration is soothing, and is also a protection against further contamination in the cleansing process. Nothing is better for cleansing these areas than the use of prolonged irrigations with normal saline solution, after which the surrounding skin areas can be sterilized with some antiseptic solution and the actual repair work begun.

Quite often the most important immediate consideration in an injury is the control of hemorrhage. This is sometimes carried out in extreme cases with little immediate regard for sepsis. There are certain areas, such as the abdomen, chest, and particularly the neck, in which it is necessary to do an exploratory operation immediately in order to prevent a fatal internal hemorrhage.

The underlying principles in shock production are still somewhat confused in the minds of many. At any rate, there is a vital depression of the circulatory system, and it is fairly easy to determine whether it is due to actual loss of blood volume or to massive tissue trauma. In any instance, large doses of morphine should be given, heat should be applied, and the blood volume should be restored by transfusion, or by the giving of plasma or saline solutions. In some cases major surgical procedures will have to be delayed.

The controlling of infection is the larger problem. The greatest factor in this condition is time, as has been stated. The tactics employed depend upon the time which has elapsed between the injury and the institution of treatment. All wounds which are not sutured within the first four hours are probably infected. Those in which repair methods have not been instituted before six hours can be definitely classed as infected. By "infected" we mean that organisms have penetrated beneath the surface of injured tissue. Of course, all these cases are contaminated immediately, but during the contamination stage, superficial organisms can readily be removed by mechanical means. Their entry is facilitated by the presence of crushed devitalized tissue and by a deficient blood supply. An attempt should be made to remove all possible sources of infection by excising damaged tissue and foreign material. In cases known to be infected the wound should not be completely sutured.

Some operators⁽⁵⁾ place non-absorbable sutures in these wounds and leave them free, to be tied when the infection subsides. The possibility of introducing bacteria and infection following the original repair work should not be overlooked. Clean wounds and surgical incisions of civil practice are sometimes contaminated by a too hasty dressing, which traumatizes a freshly healing area and exposes it to the atmosphere.

Summary

There is a distinct similarity in the types of injuries seen in war zones and in civil practice.

The ultimate results in recovery will depend to a large extent upon the physical make-up of the injured person and upon the additional defense forces which the surgeon has at his command.

The greatest complicating factor is that of infection by the streptococcus and anaerobic organisms.

By early and proper treatment—which should be governed by the time elapsing between the injury and the beginning of the repair process—, many of those injured can be restored to their former independent status.

5. Collier, F. A. and Valk, W. L.: The Delayed Closure of Contaminated Wounds. *Am. J. Surg.* 112:256-270 (August) 1940.

Sulfaguanidine, New Sulfonamide Derivative, Is Released by Squibb

Sulfaguanidine, the new sulfonamide compound which clinical trial indicates may be of great usefulness in certain diseases of the gastrointestinal tract, has been released for sale by E. R. Squibb and Sons, New York. It is supplied in 0.5 Gm. tablets, in bottles of 50, 100 and 1,000, and as a powder in 4-ounce and one-pound bottles; also in 3.5 Gm. envelopes in packages of 12.

Sulfaguanidine is distinguished from other sulfonamide derivatives by its low absorbability. This causes it to remain in the intestinal tract and exert its anti-bacterial influence therein. Consequently, it is useful in enteric infections, such as acute bacillary dysentery, and also as a preoperative and post-operative measure in surgery of the lower intestinal tract.

Like the other sulfonamides, sulfaguanidine has high anti-bacterial activity. Unlike them, and in spite of its relative solubility in water, it diffuses to a much less extent through the intestinal wall. It is, therefore, possible to obtain a relatively high effective concentration of the drug in the intestine itself (200 mg. per 100 cc.) with little penetration into the circulation and consequent systemic effects (1 to 4 mg. per 100 cc. concentration in the blood).

A tasteless drug, sulfaguanidine is administered either in tablet form or as powder in water or similar medium. Rather large doses appear to be required, even for children, but the total period of treatment should not exceed fourteen days.

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JULY, 1941

THE CLEVELAND MEETING OF THE AMERICAN MEDICAL ASSOCIATION

Cleveland proved an ideal host city for the ninety-second annual meeting of the American Medical Association. The registration, slightly more than 7,000, was below the record breaking attendance of the New York meeting last year, but it exceeded by more than 1,200 the attendance at the 1934 meeting in Cleveland. The hotels were taxed to the utmost to accommodate those who came.

As usual, the proceedings of the House of Delegates and the papers read before the scientific sessions will be published in the *Journal of the A. M. A.*; therefore no attempt will be made to give a detailed account of the meeting here. Only predominant impressions will be recorded.

This year North Carolina had three delegates, all of whom attended every meeting of the House. One was placed on the Reference Committee on Medical Education. In the first session Monday morning, following the addresses of the Speaker, the President, and the President-Elect, and the various routine reports scheduled, a great number of resolutions were introduced. These were assigned to appropriate reference committees for discussion, amendment, approval, or disapproval at later meetings. The resolutions offer a fair idea of the trend of medical

opinion in the country. This year it was apparent from the resolutions, the discussion on the floor of the House, and the table and lobby conversations that the preparedness program, with its effects upon the practice of medicine, held the center of the stage. The A. M. A.'s Committee on Medical Preparedness, under the chairmanship of Dr. Irvin Abell, has done an enormous amount of work in listing and classifying physicians for service, either military or civil. The report of this committee, published in the *Journal of the A. M. A.*, is a valuable contribution.

A resolution was passed asking that the military service of medical students and interns be deferred until completion of their training. It is hard to believe that the government will be so short-sighted as to fail to adopt this policy. As hard-pressed as is England, her medical students are exempt from military service.

Naturally great interest was shown in the trial of the American Medical Association. By unanimous vote, the Trustees of the Association were authorized to appeal from the verdict of the jury. The resignation of Chief Justice Hughes, however, making way for still another New Dealer on the Supreme Court, made most of the delegates rather pessimistic about the final outcome.

Another significant trend was the demand of the general practitioners for more recognition. A number of resolutions from various states were introduced asking: (1) for a section on general practice, and (2) for the creation of a Board to certify competent general practitioners. The first request was granted. The second was not approved, on the ground that it would further complicate the process of specialization, and that it might work a hardship on many worthy medical men. Incidentally, it was apparent that there is a strong undercurrent of dissatisfaction with the business of certifying specialists generally, and with the autocratic methods used by some of the boards.

A resolution was introduced by the only woman member of the House, Dr. Emily Barringer of New York, asking that the House approve placing women physicians on an equal footing with men, so far as military service is concerned. This resolution was disapproved by the Reference Committee on Executive Session, with the explanation that the authorities in charge of the matter had

already vetoed such action. A motion was heartily and unanimously passed, however, commending the women for their patriotism.

As the result of a study being made by Dr. Reginald Fitz, it was recommended that an annual examination of medical students and interns be made, since an undue proportion have been found to have tuberculosis.

North Carolina can take pride in the unanimous election of Dr. Fred W. Rankin, of Lexington, Kentucky, as President-Elect. Dr. Rankin was born in Mooresville, and graduated from Davidson College. He is a first cousin of Dr. Watson S. Rankin of Charlotte, and Dr. Sam W. Rankin, of Winston-Salem.

Dr. Rankin had no opposition. Also without a contest the following officers of the American Medical Association were elected: Charles A. Dukes, Oakland, California, Vice President; Charles W. Roberts, Atlanta, Georgia, and Ernest E. Irons, Chicago, Trustees. The veteran Secretary and General Manager, Olin West, was re-elected, as were Herman Kretschmer, of Chicago, Treasurer; H. H. Shoulders, of Nashville, Tennessee, Speaker; Roy W. Fouts, of Omaha, Vice Speaker; and Walter F. Donaldson, of Pittsburgh, member of the Judicial Council. The only contests were for membership on the Council on Medical Education and Hospitals, and were made necessary by a provision that "One member shall be elected annually by the House of Delegates on the nomination of the Board of Trustees." Since the presentation of only one name by the Board would be tantamount to election by the Board, three nominations were presented. Dr. Harvey Stone, of Baltimore, was elected to succeed Dr. Fred Moore, deceased. Then Dr. Rankin created another vacancy by offering his resignation from this Council, and Dr. Russell H. Haden, of Cleveland, was elected to fill his place.

The selection of a place of meeting for 1944 resulted in a contest between St. Louis and Philadelphia, in which St. Louis won by an overwhelming majority. Atlantic City and San Francisco had already been chosen for 1942 and 1943 respectively.

In keeping with the national policy of fostering friendly relations with South American countries, it was agreed that the 1942 meeting in Atlantic City should be a Pan-American affair.

PUBLIC HEALTH AND PREVENTIVE MEDICINE

The terms "public health" and "preventive medicine" are so often joined together that, in the minds of many, they seem to have become synonymous. A moment's thought will show that this is an error. Every physician practices "preventive" medicine by anticipating the consequences of disease in the patient, and preventing them if possible, but he does not practice the specialty known as "public health". By preventing certain infectious diseases—smallpox for example—by vaccination, he contributes to the health of the general public, but this is only a by-product of his work; his days are rightfully filled with the care of individuals, not with the health of people in the mass, or public health. This is the business of physicians and nurses trained in a special technique which differs so widely from that of the practicing physician that separate schools have been founded for the education of public health officials.

It is true that preventive medicine in the form of vaccination against smallpox, diphtheria, scarlet fever, tetanus and other preventable diseases has been practiced extensively by public health officials, largely because the practicing physician has either been neglectful in the discharge of his duty or has made the procedures so costly that patients have sought the less expensive public health services. Here is a source of income that is lost to the physician because of poor organization. In some communities the medical society has designated certain days on which all physicians will do any vaccination for one dollar. It is in this field that the practitioner of pediatrics comes closest to the practice of public health.

The confusion of "public health" with "preventive medicine" is not merely a matter of words, for pressure is being placed on our medical schools to install departments of "public health and preventive medicine". Many schools have yielded to this pressure, which often has been financial in nature. The question is one that deserves the careful thought of medical educators, for the school curriculum is crowded, and constant pressure for special courses ("legal medicine" or medical history, for example), under the plea of broader training for the physician, is all too apt to narrow his opportunities for acquiring the essentials and fundamentals of medicine.

Of legal medicine all he really needs to know is to keep out of court if he can and to tell the truth when he cannot. If his teachers and textbooks cannot awaken in him a desire to read for himself in the history of his profession, then lectures on this subject will only provide him with a quiet hour of somnolence. A broad culture based on a love of art, music and literature—on those things often called the humanities—is highly desirable for a physician, but this is a matter of innate ability, previous training and self-culture, and is not to be expected in the curriculum of the medical school.

It is desirable that the student should have some general information upon "public health", such as should form part of any good course in bacteriology; but when his time is largely wasted by a series of lectures and field demonstrations in the minute technique of public health work, he is being made the victim of misguided enthusiasm. It is impossible to train a medical student properly without inculcating in him the principles of "preventive" medicine, and he can safely leave the practice of "public health" to those specially trained in that art and mystery.

REPORT OF THE NATIONAL PHYSICIANS' COMMITTEE

On Thursday evening of the American Medical Association meeting, a dinner meeting of officers and state committeemen of the National Physicians' Committee for the Extension of Medical Service was held in the Cleveland Hotel. Those who attended this meeting were really amazed at the report of the Executive Administrator, Mr. John M. Pratt.

When the National Physicians' Committee was organized in November, 1939, its objectives were:

1. To make possible the providing of medical service to the indigent and those in the low income groups, and insure the most widespread distribution of the most effective methods and equipment in medicine and surgery.
2. To assume the responsibility of countering destructive propaganda by familiarizing the public with the facts in connection with the methods and achievements of American Medicine.

Mr. Pratt told how a steadily increasing campaign of publicity is carrying to the na-

tion the achievements and ideals of American medicine, and its superiority over European systems. The first step in this campaign was the publication and widespread distribution of the booklet. "Priceless Heritage"; the second, two double-page advertisements in the *Saturday Evening Post*; the third, publication—sponsored by local medical societies—of full page advertisements in about ninety influential daily newspapers; and fourth, editorial releases mailed to more than 12,000 newspapers, reaching more than forty million people. Some of these releases have been traced through hundreds of papers, often in the editorial columns.

As one of the speakers at the meeting said, "In the National Physicians' Committee the American medical profession possesses an organization potential to accomplish more for education of the American people regarding the fundamental standards inherent in the establishment of a high quality of medical service for the people of the United States, than it could possess in any other organization. . . .

"There exist in the United States many professions and groups which have for their objective the creation of a new technique in medical practice which would put the layman rather than the physician in charge of setting standards and providing medical service. So long as these professions and groups continue to exist and to grow in numbers, just so long will there have to be continuously in the forefront for the protection of medical science, an organization such as this, which can carry on not only an effective defense but an effective warfare."

The National Physicians' Committee has amply justified its existence, and deserves the continued support of the medical profession. It is doing the very thing for which the doctors of this state and others were clamoring long before it came into existence; but it cannot exist and continue to fight our battles without funds. It is to be hoped that North Carolina doctors will continue their aid to this organization. Individual contributions are, of course, welcome; but for county societies to send contributions from their funds will be more effective, and less burdensome to the individual members. Those societies that hold frequent dinner meetings might well omit one or two dinners during the year, and send the price to the National Physicians' Committee, the Pittsfield Building, Chicago.

Let us not accept the defeatist attitude that political control of medicine is inevitable. The House of Delegates voted unanimously for the American Medical Association to appeal from the weird verdict which the jury rendered in its trial. It is true that the resignation of Chief Justice Hughes made room for the seventh New Deal appointee to the Supreme Court. Even so, let us remember that "the Supreme Court follows the election returns," and that "in the final analysis, the public's opinion of the quality and effectiveness of medical service will become the deciding factor in the settlement of the problem."

It is possible to convince the public of the essential rightness of the American medical system, and the National Physicians' Committee offers the means to do it.

EDITORIAL NEWS NOTES—A.M.A. MEETING

The opening meeting on Tuesday night was characterized by a high order of speaking. The remarks of Dr. Charles T. Way, President of Cleveland's Academy of Medicine, introducing Dr. Van Etten, were short and to the point, as were Dr. Van Etten's call to order and his introduction of the other speakers. The welcoming addresses of Dr. Skipp, President of the Ohio State Medical Association, of Governor Bricker, and of Mayor Blythin were all crisp and easy on the ear. Dr. Lahey, as is well known, is a gifted speaker, and rose to the occasion in his address, "Current Problems of American Medicine", which is the leading article in the *Journal of the A.M.A.* for June 7.

* * *

The music at the Delegates' Dinner was furnished by doctors and dentists, and the musical feature of the opening General Meeting was a violin solo by Dr. Jerome Gross, a surgeon, who was accompanied by a pathologist, Dr. Rafael Dominguez.

* * *

Many veteran delegates felt keenly the absence of those splendid gentlemen and doctors of the old school from Chicago, Dr. Charles B. Reed and Dr. Charles J. Whalen. Both of these have died since the 1940 meeting. Lifelong friends, they were not separated long by death.

It is doubtful if the American Medical Association ever had a more popular president than Dr. Van Etten. He was cheered to the echo after his address at the opening meeting of the House of Delegates, and again when he spoke at the annual Delegates' Dinner. In his after-dinner speech he said that he was glad to have served the cause of organized medicine, but that he was looking forward to the greatest privilege a doctor could have—that of taking up his stethoscope and resuming his private practice.

* * *

The award of the distinguished service medal to Dr. James Ewing, of New York, met with universal approval. The medal was presented during the opening General Meeting by Dr. Lahey.

* * *

North Carolina was well represented at the A. M. A. meeting. At least forty-six doctors from the state were registered, and eight appeared on the program.

* * *

Friday—the last day of the meeting—all the exhibits were closed at noon. That afternoon quite a respectable representation from the medical profession watched Bob Feller shut out the Philadelphia Athletics while his mates scored two runs.

* * *

The official representative of the Canadian Medical Association, Dr. T. C. Routley, was present and addressed the House on its opening session. His words were few, but exceedingly well chosen.

CONGRATULATIONS, DR. HALL!

In the press of reporting the annual meeting of the State Medical Society, an event of great importance to North Carolina doctors was overlooked in last month's issue of this Journal. The American Psychiatric Association, at its annual meeting in Richmond, May 5-9, elected Dr. James K. Hall, Superintendent of Westbrook Sanatorium, as its President. A more worthy leader could not have been found. The NORTH CAROLINA MEDICAL JOURNAL, on behalf of the membership of the State Society, extends its heartiest congratulations—as sincere as belated—to this distinguished native son of North Carolina.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

DR. JAMES P. HENDRIX (reading the clinical summary):

This patient, a 53 year old, married white man who worked in a lumber yard, was seen first in the Medical Outpatient Clinic, and was admitted to the hospital two days later. He complained of chronic cough and of pain in his chest for one week.

The patient's mother and one brother had died of influenza. The father died of a "stroke". One sister had goiter. Three brothers and two sisters were living and well.

The patient had influenza in 1918, followed by pleurisy or pneumonia. He had pleurisy again in 1928. He had typhoid fever at the age of 11. For about twenty years he had had episodes (lasting three to four weeks) of gnawing pain around the umbilicus. The pain usually was relieved by food. Twelve years ago he had bloody diarrhea for two weeks and after that had hemorrhoids, which were painful at times. Six months before admission there was a "boil high in the rectum" which ruptured and drained purulent material for two weeks.

While the patient thought that he had not been strong since his illness with influenza in 1918, he had carried on successfully in a position requiring hard work. About three years before admission, after having a mild cold for about a week, he developed wheezing respiration while at work one day. This difficulty in breathing became more severe toward night and his physician administered a hypodermic, which brought relief in about thirty minutes. Every winter after that he caught cold easily and kept a chronic cough most of the time. The attacks of difficult breathing recurred occasionally, and upon two or three occasions required hypodermics, which always brought relief.

About one week before admission his cough became worse and he developed a dull substernal aching pain, which radiated through to the back between the shoulder blades. He also felt chilly at times and suffered from general malaise.

In the Outpatient Clinic the patient was observed to be poorly nourished but did not

appear particularly ill. The temperature was 37.3 C., pulse 100, respirations 22, and blood pressure 120 systolic, 78 diastolic. The submaxillary and inguinal lymph nodes were slightly enlarged. There was a small red area behind the right ear at the site of a healing furuncle. The left pupil was larger than the right and both reacted rather sluggishly to light. The retinal arteries were narrowed and tortuous. There was slight venous engorgement in the neck. The chest was moderately emphysematous, expansion was poor and inspiratory musical rales were heard over both lungs. The heart was thought to be slightly enlarged to the left and the sounds were distant. There was very slight peri-umbilical tenderness. On rectal examination no hemorrhoids or masses were detected but there was some deep tenderness high up in the rectum. Neurological examination was negative.

At this visit the hemoglobin was 79 per cent; the urine examination and the blood Wassermann and Kahn reactions were negative. An x-ray film of the chest showed some soft diffuse increase in peribronchial markings, extending downward from both hila, consistent with asthma. X-ray study of the digestive tract on the day after the first visit showed delayed emptying of the stomach due to dilatation of the descending portion of the duodenum, with some reverse peristalsis. The radiologist interpreted the findings as suggestive of mesenteric ileus.

Two days after his initial visit, the patient returned to the clinic and reported that he had not been feeling well and had had three shaking chills since his first visit. The temperature was found to be 39.3 C., pulse 120, and respirations 32. He appeared much sicker than he had two days earlier, and was admitted to the hospital. The physical findings after admission were similar to those in the clinic, but the patient appeared acutely ill. The inequality and sluggishness of the pupils were again noted, as were slight enlargement of the heart to the left, distant quality of the heart sounds, and slight engorgement of the neck veins. The musical rales were less prominent than before, but a few fine and medium rales were heard at the bases of both lungs. There was no edema or cyanosis.

A blood count showed 12 Gm. of hemoglobin (78 per cent), 4,490,000 red blood cells, and 17,940 white blood cells, with 85 per cent polymorphonuclears, of which 18

per cent were young forms. The sedimentation rate was 32 mm. per hour. Fresh and stained smears of the blood showed no abnormalities. The blood Wassermann and Kahn reactions again were negative. The urine was negative, except for an occasional white blood cell and granular cast. The sputum showed many gram-positive cocci, but no diplococci or acid-fast organisms. The blood nonprotein nitrogen was 38 mg. per 100 cc. and the blood bromide was 66 mg. per 100 cc.

An electrocardiogram on the day after admission showed slurred QRS complexes in all leads and elevation of R-T segment in leads I, II, and III. Repetition of the x-ray of the chest on the same day indicated partial clearing of the soft infiltration in the median part of the lungs, but the heart was observed to be considerably larger than before. A third film five days after admission, and four days after the second one, showed more pulmonary congestion and greater enlargement of the heart.

Blood culture taken on the day of admission to the hospital was positive for hemolytic staphylococcus aureus. There were three colonies per cubic centimeter. There was an increasing number of colonies in blood cultures on the next two days.

From the time of admission until death the patient remained acutely ill. His temperature ranged between 38 and 39 C. most of the time, and his white count from 14,000 up to 25,000, with 80-90 per cent polymorphonuclears. On the second hospital day, venous pressure was found to be slightly elevated—110 mm. of water. In view of the increasing size of the cardiac shadow, the distant heart sounds, and the elevation of venous pressure (without evidence of cardiac failure), and in the presence of evidence of acute infection, a tentative diagnosis was made of acute pericarditis with effusion. (This diagnosis was made before the result of the blood culture was reported.) In the evening of the same day a definite pericardial friction rub was heard over the lower sternum, which confirmed the tentative diagnosis. The patient was placed on sulfapyridine and later on sulfathiazole. He also received 100,000 units of staphylococcus antitoxin intravenously.

On the fifth hospital day, after the venous pressure had risen gradually to 200 mm. of water, a pericardial paracentesis was done and 150 cc. of cloudy fluid was removed,

from which hemolytic staphylococcus aureus was cultured. The pericardium was tapped on each of the three following days, with the removal of 400, 300 and 10 cc. of fluid, which then had become blood tinged. Gentian violet was injected into the pericardium after the tap on two occasions, but did not sterilize the pericardial cavity. Several transfusions and repeated infusions of fluid were given.

During this time the patient was very weak. He continued to complain of substernal pain, took fluids and nourishment poorly, and had considerable discomfort from abdominal distention. However, by the seventh and eighth hospital days there appeared to be a little improvement. The temperature fell below 38 C., and blood culture showed less than one colony per cubic centimeter. On the ninth hospital day surgical drainage of the pericardium was carried out under local anesthesia. Approximately 200 cc. of thin sanguinopurulent material was aspirated, and several large clots were removed. Drains were left in the pericardial cavity. The patient stood the procedure well and his condition remained about the same. There was moderate serosanguineous drainage from the operative wound.

On the morning of the second day after the operation it was noted that the patient was slightly cyanotic and that respirations were labored. He improved after being given coramine and a transfusion. At 4:30 p. m. on the same day, while straining in an attempt to expel flatus, the patient suddenly began to bleed profusely from the operative wound. The pulse was rapid and weak, he became cold and clammy, and blood pressure dropped to 100 systolic, 60 diastolic. It was estimated that 300-400 cc. of blood was lost. Pressure was applied to stop bleeding; the patient was treated for shock and given another transfusion. He improved temporarily. However, about four hours later he rapidly went into shock again; this time he failed to respond to stimulants, and expired.

Discussion

DR. HENDRIX: Generally speaking, pericarditis is a secondary condition. It may occur following direct infection of the pericardium from wounds, and it is sometimes associated with uremia and coronary occlusion. However, most cases of pericarditis follow infection elsewhere in the body. It is not difficult to understand why this patient developed pericarditis; he had hemo-

lytic staphylococcus septicemia. Nor is it surprising that he failed to survive this grave condition, which has a very high mortality rate. However, we have no satisfactory explanation for the onset of the staphylococcus blood stream infection, and we do not understand the events leading immediately to the patient's death.

Concerning the onset there appear to be at least three possibilities: (1) There was an exacerbation of the patient's chronic cough with chest pain at the time of the onset of the present illness. X-ray showed some infiltration of both lower lobes. Hence, the patient might have had some bronchopneumonia, due to staphylococcus, and the organism may have gained entrance to the blood stream through the lungs. (2) In the history is mentioned an abscess "high in the rectum" which drained pus for two weeks about six months prior to the present illness. It is possible that the patient had a perirectal abscess which ruptured at that time, but which re-formed (there was deep tenderness in the rectum when he came to the hospital) and furnished the portal of entry for the organism. However, one would hardly expect to find the staphylococcus in such a lesion. (3) The most important possibility for the source of the infection was a lesion so insignificant that it was not mentioned in the clinical history, although it was detected during the first physical examination. You will recall that when the patient entered the clinic the examiner noted the presence of a small subsiding furuncle behind the left ear. Inasmuch as the organism found in the blood, and later in the pericardium, was a staphylococcus, it seems most likely that it came from this lesion.

Concerning the events immediately preceding death, it can be stated that death was precipitated by shock and that shock was produced by the severe bleeding which was observed from the operative wound. The source of this hemorrhage is unknown and we must look to the pathologist for an explanation. As in any other operative procedure, bleeding may have occurred as a result of the opening of an artery which was tied at operation. The internal mammary artery would have been encountered during this operation, and probably was ligated and cut. It is a vessel of good size, and could have produced the bleeding observed if the ligature had slipped. However, out of respect to our surgical colleagues, it must be

said that such an accident is very unlikely. The next possibility is that the purulent infection eroded into a vessel within the pericardial cavity and thus produced the hemorrhage. If this was the case one can not do more than speculate as to what structures were involved.

It seems apparent then that this patient had: (1) staphylococcus septicemia probably originating from a furuncle behind the left ear; (2) secondary acute purulent pericarditis, due to the same organism; (3) severe hemorrhage into the pericardial cavity. The inequality and sluggishness of the pupils is at least suggestive of metastatic brain abscess, which might have followed the septicemia. However, there were no other neurological signs to support this idea. In addition, one might expect to find, chiefly because of the history, a perirectal abscess and possibly an old peptic ulcer as well.

Pathological Report

DR. DOUGLAS H. SPRUNT: The anatomical diagnosis in this case is: mediastinal abscess at the root of the aorta and pulmonary artery (staphylococcus aureus); fibrinous pericarditis; mycotic aneurysm of the aortic wall; pulmonary arteritis; pulmonary valvular endocarditis; rupture of the mycotic aneurysm with hemorrhage; central necrosis of the liver. (Permission to examine the brain was not given.)

The course of events in this case was as indicated in the anatomical diagnosis. The patient had staphylococcal bacteremia, probably originating from the furuncle behind the ear. Some of these organisms localized in the mediastinum, forming an abscess. These organisms invaded the aorta and pulmonary artery, thus serving as a focus for a generalized blood stream infection. The invasion of these organisms into the wall of the aorta resulted in its destruction, with the formation of a mycotic aneurysm which eventually ruptured, causing hemorrhage and death.

Dehydration Caused by Fever.—Fever induces a rapid loss of water from the body, and this should be compensated for. Some years ago Dr. Du Bois said that the best way to guide adequate fluid intake is by observing the urine to see that it is dilute and colorless. That is a better guide than prescribing that the patient should have a certain number of cubic centimeters daily.—Walter L. Niles, in a Conference on the Management of Fever, New York State Journal of Medicine, 40:1740 (December 1) 1940.

CASE REPORT

NORTH CAROLINA BAPTIST HOSPITAL

By Dr. W. L. Grimes and Dr. Clifford Gryte

A white male child 12 years of age was admitted to the hospital complaining of pain in the left upper quadrant. The onset of the illness was somewhat indefinite. The patient stated that for the past year he had been having a dull aching pain and a feeling of fullness in the left upper quadrant, which was aggravated by eating a large meal or running. The pain was present most of the time, but varied in severity from time to time. Accompanying this pain was vomiting, which usually followed a rather hearty meal, laughing or crying. Nausea was usually not marked.

The patient had noticed a progressive enlargement of his abdomen for the past six months, and a gradual loss of weight to the extent of 10 pounds over the same period of time.

The mother noticed that the child did not look as well as he had, and that he appeared rather apprehensive and refused to play with other children.

The past history was non-contributory. The patient's first cousin had had a nephrectomy because of a tumor and had died a month or two following the operation.

Physical examination revealed a fairly well developed and well nourished white male child who did not appear acutely ill. Examination of the lungs revealed elevation of the left diaphragm. There was a large, smooth mass in the left upper quadrant which moved on respiration and presented a notch on its medial border. It was only moderately tender on deep palpation. The liver was felt about two fingers' breadth below the costal margin. The blood pressure was 120 systolic, 76 diastolic; the pulse, 120; temperature, 100 F.; respirations, 22.

Examination of the urine on admission showed an acid urine with a 1 plus reaction for albumin, and no sugar. There were a moderate number of hyaline and granular casts, an occasional white cell, and a specific gravity of 1.010. Repeated examinations showed a gradual increase in albumin and casts of various types. The nonprotein nitrogen was found to be 30 mg. per 100 cc. A kidney function test by the use of phenol-sulfonphthalein revealed 53 per cent elimination in two hours. There were 4,500,000

red blood cells, with a hemoglobin of 80 per cent; there were 6,200 white cells with 64 per cent polymorphonuclears and 36 per cent lymphocytes. Repeated blood counts revealed a progressive fall in red cells with a corresponding drop in hemoglobin.

Roentgen Diagnosis

By Dr. J. P. Rousseau

Tumor of the left upper abdomen.

Comment: The abnormal findings on the left pyelo-ureterogram are large soft tissue density in the left upper abdomen, obscured left kidney outline, slight outward and downward displacement of the kidney, and medial displacement of the upper third of the ureter. The kidney pelvis and calices do not seem to be distorted or deformed, and this fact tends to exclude the possibility of a primary neoplasm. On the flat film of the abdomen calcium deposits could be seen within the tumor itself, and on the study of the stomach with a barium meal the stomach was found to be markedly displaced to the right side and anteriorly. This would indicate the presence of a retroperitoneal tumor, and I believe that the possibility of a kidney lesion must still be considered. It will not be possible to make a positive diagnosis in this case without an exploratory operation.

Clinical Impression

I. Splenomegaly.

Cause: 1. Gaucher's disease.

2. Tumor of the spleen.

An exploratory laparotomy was performed and a very large spleen was removed. Considerable shock accompanied the procedure, but the patient made a good recovery with blood plasma and transfusion.

Surgical Pathological Report

By Dr. J. C. Reece

Gross Description: The specimen consists of the spleen, which weighs 4 pounds and 3 ounces, or 1530 Gm., and measures 21.5 cm. in its greatest diameter. The outer surface is dark red in color and mottled in appearance. Several indurated plaques can be found upon the anterolateral surface; in other areas the splenic substance shows considerable degrees of softening. A notch is found on the right border of the spleen that measures about 1.5 cm. in depth. On section

through the splenic substance, a large, lobulated and nodular tumor mass is found measuring 16 cm. in its greatest diameter, completely replacing the splenic substance except for a small rim on the outer surface measuring from a few millimeters to about 2 cm. in thickness. In some places the lobulated masses present themselves just beneath the capsule and in other areas they show definite infiltration throughout the splenic substance. Sections through the tumor show the stroma to be light gray, smooth, homogeneous in texture, and glistening. In some portions dark yellow, quite friable, degenerative areas are found.

A small lymph node is found at the hilus of the spleen. The lymph node measures 2 cm. in its greatest diameter and is lobulated on its outer surface. On section the cut surface is grayish white, firm and homogeneous in texture. Some portions show considerable degrees of fibrosis.

Microscopical Description: Sections from the tumor nodule found within the spleen show the stroma to be extremely cellular, composed of rather irregular cells varying considerably in size and shape and lobulated in many portions; the nuclei of the cells take a dark purple stain. In some portions giant cell formation is observed, and a considerable number of cells are undergoing mitotic changes. The stroma in many portions is fibrous and in other areas shows a considerable degree of degeneration and infiltration. Sections coming from the splenic substance itself show a considerable degree of necrosis and destruction of the lymph follicles in areas. In other portions the splenic tissue is heavily infiltrated with red blood corpuscles. Sections from the hilus lymph node show destruction of the lymph follicles and marked degrees of fibrosis. Large groups of cells, identical with those described within the splenic substance, are found within the lymph node removed from the hilus.

Diagnosis: Reticulum cell sarcoma of the spleen.

The patient's postoperative course was uneventful. Since his discharge, about one month ago, the patient has gained 12 pounds. He seems to be in good health.

A man who has a theory which he tries to fit to facts, is like a drunkard who tries his key haphazard in door after door, hoping to find one it fits.—The Papers and Speeches of John Chalmers DaCosta, Philadelphia, W. B. Saunders Co., 1931, p. 49.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL. B.

Raleigh

Malpractice: Leaving gauze sponge in operative wound raises inference of negligence sufficient for consideration by jury. Assistant also liable.

This case was considered by the North Carolina Supreme Court upon an appeal of the defendants, a surgeon and his assistant, from a judgment rendered in the Superior Court of Buncombe County affirming the judgment of the general county court of Buncombe County. Recovery had been made against the defendants for injuries which the plaintiff alleged she sustained through the negligence of the defendants in leaving a gauze sponge deeply buried in the side of her leg or hip, about one-half inch from the thigh bone, where it had been placed during an operation performed upon her by the defendants. Proof that the gauze had been left in the surgical wound was complete. As a result of this alleged negligence suppurating channels or sinuses were formed in the leg, beginning in the vicinity of the gauze sponge and extending through the intervening tissue to the exterior, where quantities of offensive pus were discharged, until a second operation was performed some months after the first. There was evidence sufficient for the jury to consider showing proximate causative connection between the presence of the pad and certain deleterious conditions complained of, among them excessive pain, inconvenience, physical and mental discomfort and suffering, disorder of the nervous system, and possibly a permanent injury through the stiffening of the knee joint. The evidence also indicated that both of the defendants had assisted in placing the gauze sponges in the wound. Both defendants testified as to the methods employed during the operation, and the manner in which the gauze sponges, nearly 100 in number, had been handled. They testified, both from observation and as experts, that great care had been exercised in the usual and customary manner to prevent leaving any sponges in the wound. They described the method as "palpating" or feeling for the sponges, and testified that this was done thoroughly and with due care. Several experts were examined, who approved of the methods employed by the defendants. Their evidence, however, was largely directed to approval of the general treatment given the plaintiff and to the general results produced. The most important question for consideration by the Supreme Court was the refusal of the trial judge to grant the defendants' motion as of nonsuit made upon trial. The Supreme Court felt that this refusal was absolutely correct, despite the testimony introduced tending to show that due care had been exercised in performing the operation. As was to be expected in this case, the doctrine of *res ipsa loquitur* (the thing speaks itself) was invoked, and according to the opinion of the Supreme Court applied in this instance, but the Court also held as follows: "The fact of leaving a sponge in plaintiff's body is so inconsistent with due care as to raise an inference of negligence entitling plaintiff to go to the jury irrespective of the application of the doctrine of *res ipsa loquitur*." Therefore the judgment for damages of the lower court was affirmed. From the decision rendered in this case it is reasonable to assume that it is almost impossible to offer testimony suitable to offset the inference of negligence raised by definite proof of leaving a sponge in an operative wound.

Another phase brought out in this suit which should perhaps be of interest to interns, surgical residents, and other assistants is that both the

surgeon and the assistant were held equally responsible. The law regarding this is as follows: "Where one surgeon assists another in performing an operation and both assist in placing gauze sponges in the wound, both are charged with the duty of exercising due care to remove all the gauze sponges."—N. C. Supreme Court Report, Book 219, p. 178.

CORRESPONDENCE

HEADQUARTERS FIRST MILITARY AREA
Knoxville, Tennessee
June 23, 1941

Dr. Wingate Johnson, Editor,
North Carolina Medical Journal,
Winston-Salem, North Carolina.

Dear Sir:

The War Department has just announced an extensive program to provide for the procurement of Doctors for the Army of the United States during the next few years. Since medical officers are a vital part of the national defense program, it is believed that the readers of your Journal will be interested in the program by which junior and senior students of recognized medical schools and those graduate students who are now serving their internship may be assured of completing their education and training before being called into the service of their country.

It is contemplated that all bonafide junior and senior male medical students, who are in good standing, meet the physical requirements for commission, will, upon application, be appointed second lieutenants, in the Medical Administrative Corps of the Officers' Reserve Corps. The students commissioned under this provision will be members of the armed forces of the United States, and will, upon application to their local draft board, be placed in Class I-C, and will not be called into active military service by the Selective Service System.

Application for appointment in the Officers' Reserve Corps, is absolutely voluntary on the part of the students, but it is expected that they will be allowed to finish their education and training before being called into active military service, and that when they are called, upon completion of their training, that they will have the rank and pay of an officer rather than that of a private in the Army.

It is expected that as the students actually complete their education and receive their

degrees, they will, upon application, be transferred from the Medical Administrative Corps to the Medical Corps Reserve, and given the rank of first lieutenant. It is contemplated that the graduates will be allowed to serve one year of internship before being ordered to active duty as an officer in the army of the United States for a period of one year.

Those graduates of recognized medical schools, who are now serving their one year's internship, may make application for appointment as first lieutenant, medical corps reserve, provided they meet the physical requirements, and will agree to accept active duty for one year as soon as they have completed their internship. Those interns who take advantage of the opportunity offered and make application for commission and are subsequently appointed a commissioned officer in the Officers Reserve Corps, will not be drafted by the Selective Service System, but will be called into service as an officer, after they have completed their training.

In view of the fact that your publication has such a large circulation among the various medical colleges, hospitals, and doctors in general, it is believed that, if you will give this vital information wide publicity in the next issue of your medical journal, you will be rendering a patriotic service in our national defense effort; and in aiding the young doctor to assure himself that he will be permitted to complete his education and training without fear of being called into active military service until such time as he has become a qualified physician, you will be helping to maintain the medical profession on the high plane which it has always held.

Yours very truly,

CLIFFORD JONES,
Colonel, C.A.C.,
Executive.

Legal Reasoning. — Fortunately, rancorous disputes have nowadays largely ceased to afflict the relations of real scientists. Yet there is still far too much of that spirit in the world at large. It has been well said that "Most men think with their emotions rather than their intellects." The ancient method of verbal combat is still employed in our law courts and legislative halls. Each participant adheres to his thesis. Search is then made for evidence to support it and at the same time to refute its opponents. An equal effort is made to suppress or depreciate any facts that may prove to be embarrassingly adverse. — Eliot Blackwelder: *Science and Human Prospects*, Science, 93:361 (April 18) 1941.

BULLETIN BOARD

SECRETARY'S MESSAGE

This first month has been a very busy one for your secretary: moving the office from Roanoke Rapids to Red Springs; trying to familiarize myself with some of the details of the office; answering some of the numerous letters I have received from many of the doctors—and some of the doctors' wives—all over the state.

With the able assistance of Miss Margaret Long things were beginning to take shape. Then the Navy stepped in; she gave it priority and left very unexpectedly to go on her honeymoon. This accounts for the delay in answering some of my mail.

In addition to all this I have been very much concerned about the recent decision against the American Medical Association and the fact that this decision may be sustained by the higher courts. Have you physicians of North Carolina considered how far reaching this may be in its effects?

We can do much as a society if every secretary of every organized county society sees that every physician in his county is a member of his society, with county and state dues paid up to date. An organized body working together can do much to crystallize public sentiment.

Abraham Lincoln said, "Public sentiment is everything. With public sentiment nothing can fail: without it nothing can succeed. Consequently he who molds public sentiment goes deeper than he who enacts statutes or pronounces decisions. He makes statutes and decisions possible or impossible to be executed."

Let's all get together and North Carolina will do her part.

Think it over seriously.

ROSCOE D. McMILLAN, M.D.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. William deB. MacNider has just been elected President of the Society for Experimental Biology and Medicine for the coming year.

* * *

Dr. H. D. Bruner, Assistant Professor of Physiology in the School of Medicine, has been selected to write the section on "The Physiology of Blood" for Volume 5 of the *Annual Review of Physiology*, to be published in 1943. This selection is a tribute to Dr. Bruner's important research in the field of blood for the past few years.

* * *

Dr. H. G. Baity, Professor of Sanitary Engineering on the School of Public Health Faculty, has been appointed by the Surgeon General of the U. S. Public Health Service as a member of the Advisory Committee to formulate revisions of "The Treasury Standard for Drinking Water".

* * *

Dr. George B. Darling, President of the W. K. Kellogg Foundation, visited the School of Public Health of the University of North Carolina during May and gave an address on "An Over-View of the Michigan Community Health Project".

* * *

Dr. D. F. Milam, Professor of Nutrition of the School of Public Health, attended the National Conference for Nutrition and Defense in Washington during May. Dr. Milam read a paper "Nutrition Survey in a North Carolina Community" before Section III of the Conference.

Dr. J. B. Grant, a member of the staff of the International Health Division of The Rockefeller Foundation and Acting Director of the All-India Institute of Hygiene and Public Health, Calcutta, visited the School of Public Health for several days during the month of June.

* * *

Dr. Fred C. Kluth, a Fellow of the Rockefeller Foundation, will be in Chapel Hill this summer carrying on a serological survey of syphilis in Chatham County.

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President W. A. Sanger and Dr. Fred Wampler, Professor of Preventive Medicine, of the Medical College of Virginia at Richmond, were recent visitors of the School of Public Health.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE

The following additions to the faculty of the Bowman Gray School of Medicine have been made:

Dr. Arthur Grollman, Research Professor of Medicine and Associate Professor of Biochemistry.

Dr. Robert L. McMillan, Associate Professor of Clinical Medicine.

Dr. Elbert A. MacMillan, Assistant Professor of Clinical Medicine and Neuropsychiatry.

Dr. John R. Williams, Jr., Assistant Professor of Medicine.

Dr. P. A. Yoder, Assistant Professor of Clinical Medicine and Physical Diagnosis.

Dr. W. DeK. Wylie, Assistant in Clinical Medicine.

Dr. J. C. Pass Fearrington, Assistant in Clinical Medicine.

Dr. E. Bruce Brooks, Assistant in Clinical Medicine.

Dr. E. S. Avery, Assistant in Clinical Medicine.

Dr. O. E. Wright, Assistant in Clinical Medicine.

Dr. B. B. Pool, Assistant Professor of Clinical Medicine and Allergy.

Dr. W. L. Kirby, Assistant Professor of Clinical Dermatology.

Dr. Wortham Wyatt, Assistant in Clinical Dermatology.

Dr. C. A. Street, Associate Professor of Clinical Pediatrics.

Dr. Glenn Pool, Assistant in Clinical Pediatrics.

Dr. Vernon C. Lassiter, Assistant in Clinical Surgery and Assistant Professor in charge of Industrial Medicine.

Dr. H. W. Goswick, Jr., Assistant in Clinical Surgery.

Dr. C. H. McCants, Assistant in Clinical Surgery.

Dr. E. L. Gilbert, Assistant in Clinical Surgery.

Dr. W. H. Sprunt, Jr., Professor of Clinical Surgery.

Dr. W. L. Grimes, Professor of Clinical Surgery.

Dr. H. G. Schwartz, Assistant Professor of Surgery in charge of Neuro-Surgery.

Dr. W. P. Speas, Assistant Professor of Surgery in charge of Ophthalmology.

Dr. R. A. Moore, Assistant Professor of Surgery in charge of Orthopedics.

Dr. F. K. Garvey, Assistant Professor of Surgery in charge of Urology.

Dr. G. C. Cooke, Assistant Professor of Clinical Surgery.

Dr. R. L. Wall, Assistant Professor of Surgery in charge of Anesthesia.

Dr. J. A. Harrill, Assistant Professor of Surgery in charge of Otorhinolaryngology and Bronchoscopy.

Dr. J. C. Watkins, Professor of Clinical Dental Surgery.

Dr. G. W. Holmes, Instructor in Clinical Orthopedic Surgery.
 Dr. S. W. Rankin, Instructor in Anatomy and Clinical Otorhinolaryngology.
 Dr. Edgar V. Benbow, Instructor in Clinical Surgery.
 Dr. Fielding Combs, Assistant in Clinical Otorhinolaryngology.
 Dr. V. Rex Sink, Assistant in Clinical Bronchoscopy and Otorhinolaryngology.
 Dr. V. F. Couch, Assistant in Clinical Otorhinolaryngology.
 Dr. H. LeRoy Izlar, Assistant in Anesthesia.
 Dr. H. F. Munt, Assistant in Clinical Orthopedics.
 Dr. C. S. Drummond, Assistant in Clinical Proctology.
 Dr. R. W. Spicer, Professor of Clinical Obstetrics and Gynecology.
 Dr. C. H. Mauzy, Assistant Professor of Obstetrics and Gynecology.
 Dr. Paul W. Johnson, Assistant in Clinical Obstetrics.
 Dr. C. N. Adams, Assistant in Clinical Obstetrics and Gynecology.
 Dr. L. C. Ogburn, Assistant in Clinical Obstetrics and Gynecology.
 Dr. Ruth Henley, Assistant in Clinical Obstetrics.
 Dr. O. R. Keiger, Assistant in Clinical Obstetrics.
 Dr. J. Roy Hege, Lecturer in Public Health.
 Dr. R. L. Carlton, Lecturer in Public Health.
 Dr. William Allan, Professor of Medical Genetics.
 Dr. Paul David, Consultant in Medical Genetics.
 Dr. B. A. Helsabeck, Assistant in Clinical Surgery.
 Dr. T. W. Davis, Professor of Clinical Otorhinolaryngology.
 Dr. B. N. Jones, Assistant in Clinical Otorhinolaryngology.
 Dr. Robert T. Garvey, Professor of Clinical Urology.
 Dr. J. F. Belton, Assistant in Clinical Medicine.
 Dr. B. E. Pulliam, Assistant in Clinical Medicine.
 Dr. R. R. Jones, Assistant in Clinical Medicine.
 Dr. Anne Stephenson, Assistant in Clinical Obstetrics and Gynecology.
 Dr. R. V. Wolfe, Assistant in Clinical Surgery.
 Dr. D. C. Speas, Assistant in Clinical Surgery.
 Dr. C. M. Norfleet, Jr., Assistant in Urology.
 Dr. C. N. Herndon, Instructor in Medical Genetics.
 Miss Florence Dudley, Assistant in Medical Genetics.
 Dr. R. P. Morehead, Associate Professor of Pathology.
 Dr. W. C. Thomas, Instructor in Pathology.
 Dr. William A. Wolff, Consultant in Clinical Chemistry.
 Dr. W. H. Fishman, Instructor in Biochemistry.
 Miss Marjorie Swanson, Assistant in Biochemistry.
 Dr. J. B. Whittington, Professor of Hospital Administration.
 Dr. S. D. Craig, Associate Professor of Clinical Medicine.
 Dr. E. S. Thompson, Instructor in Industrial Medicine.
 Dr. G. E. Bradford, Assistant in Clinical Otorhinolaryngology.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Raleigh.—From January 1, through May, this year, there were 34,444 babies born in North Carolina, which was just 1,973 in excess of the number born during the corresponding period of 1940, the State Board of Health reports. Births during that period exceeded the 14,424 deaths in the state by 20,020.

Maternal deaths were shown to be on the de-

crease, there having been only 161 during the first five months of 1941, as compared with 188 for the same period last year, a decrease of 27.

However, from January through May, vital statistics figures show, 709 persons in North Carolina were accidentally killed, as compared with 543 for the same period a year ago—an increase of 166. Most of these deaths resulted from traffic accidents.

There were, during the period of the compilation, 104 fewer deaths from pneumonia than occurred a year ago, 39 fewer deaths from tuberculosis and 23 fewer from diphtheria. Up to June 1, there had been only 28 diphtheria deaths in the state. Last year there were 51 during the first five months, 27 of these occurring in January alone, as compared with only 9 in January this year.

* * *

Recommendations adopted by the National Nutrition Conference for Defense, called by President Roosevelt, will be submitted to North Carolina's General Nutrition Committee for incorporation into the statewide program which was set up nearly two years ago, Dr. Carl V. Reynolds, State Health Officer, announced upon his return from Washington.

While an attendance of only 500 had been anticipated, there were 1,000 present from all sections of the United States, indicating the intense interest in the subject of nutrition as a means of winning the war.

The North Carolina committee will be called together very shortly for a conference, in order that the resolves of the Washington conference may be translated into action here, the Health Officer said.

* * *

The results in the tests for syphilis made on specimens from 136,756 of the 453,729 men who registered in October were recently compiled by Dr. John H. Hamilton, Director of the State Board of Health's Laboratory of Hygiene, where most of the tests were run. Of the total number of specimens tested, 11,500 showed a positive reaction, divided as follows: White men, 1,463, or 1.9 per cent; Negro men, 10,005, or 17.2 per cent, and Indian men, 82, or 5.7 per cent.

* * *

The Division of County Health Work's summary shows that, since July, 1940, five additional counties have established full-time, qualified, organized health departments, in addition to those functioning separately in six cities, which now brings approximately 95 per cent of our population the advantages that accrue. There are employed at the present time in these 81 counties and in the cities referred to, with the exception of Winston-Salem, reports from which are not included here, 667 full-time health workers. Should we add to this the 208 persons comprising the personnel of the State Board of Health, it would give a grand total of 875 fully trained men and women whose lives are dedicated to the task of removing those conditions which retard your health and well-being, through the means at their disposal.

A year ago, there were 175 maternity and infancy clinics, or centers, in 52 counties. The number of such clinics now has been increased to 240, extending fairly well over 67 counties. In this work about 200 practicing physicians have given aid to the health officers. There have been nearly 29,000 infant visits made to these clinics, while nearly 16,000 expectant mothers have reported for examination and advice.

Although there were 5,526 more women visiting maternity clinics in 1940 than there were in 1939, the syphilis rate dropped from 13.5 to 10.8 per cent in a single year, reflecting the efforts of those engaged in the fight against venereal diseases.

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

A number of North Carolinians were elected to various positions at the annual meeting of the National Tuberculosis Association and the American Trudeau Society held in San Antonio last month. Dr. Paul P. McCain of Sanatorium, N. C., the retiring president of the National Tuberculosis Association, was elected to the Executive Committee of the National Tuberculosis Association and was succeeded by Dr. Bruce H. Douglas, Commissioner of Health, Detroit, Michigan, to the presidency. Dr. McCain also was elected to the Council of the American Trudeau Society and placed as Chairman of the Rehabilitation Committee of the Council. Dr. David T. Smith, Duke University, member of the Board of Directors of the North Carolina Tuberculosis Association, was made chairman of the program committee of the American Trudeau Society.

Dr. S. M. Bittinger, Superintendent of the Western Sanatorium, and a member of the Board of Directors of the North Carolina Tuberculosis Association, was reelected as a Director of the National Tuberculosis Association. Dr. Paul Ringer, of Asheville, and Dr. R. L. Carlton, of Winston-Salem, are other North Carolinians now on the National Board of Directors.

Frank W. Webster, Executive Secretary of the North Carolina Tuberculosis Association, was placed on the Rehabilitation Committee of the National Conference of Tuberculosis Secretaries.

* * *

Miss Ruby Lucille Franks, a student at Winston-Salem Teachers College, and Miss Cornelia A. Flynt, a student at Carver High School in Winston-Salem, were the state winners in the Eighth Annual College and High School Essay Contests sponsored by the National Tuberculosis Association and the North Carolina Tuberculosis Association.

SOUTHERN PEDIATRIC SEMINAR

The Twenty-First Session of the Southern Pediatric Seminar will be held at Saluda, North Carolina, July 21 to August 2. Dr. Samuel F. Ravenel is Dean of the Seminar, Dr. Frank H. Richardson Vice-Dean, and Dr. D. L. Smith, Registrar. The Obstetrical Division is under the direction of Dr. Oren Moore, Dean. Model Maternal and Child Health Clinics will be operated under the direction of Dr. Robert B. Lawson. There is a registration fee of \$25. Accommodations may be secured by communicating with the Registrar, Dr. D. L. Smith, at Saluda.

THE AMERICAN COLLEGE OF PHYSICIANS

announces its
Twenty-Sixth Annual Session
to be held in

St. Paul, Minn.—April 20-24, 1942

Dr. Roger I. Lee, of Boston, is President of the College, and will be in charge of the program of General Sessions and Lectures. Dr. John A. Lepak, of St. Paul, has been appointed General Chairman, and will be in charge of the program of Hospital Clinics and Round Table Discussions, as well as local arrangements, entertainment, etc. Mr. Edward R. Loveland, Executive Secretary of the College, 4200 Pine Street, Philadelphia, will have charge of the general management of the session and the technical exhibits.

Other medical societies are urged to note these dates in order that conflicts in meeting dates may be avoided for mutual benefit.

NEUROPSYCHIATRIC SOCIETY OF VIRGINIA

The June meeting of the Neuropsychiatric Society of Virginia was held at the Academy of Medicine Auditorium, Twelfth and Clay Streets, Richmond, at 2 p. m. Wednesday, June 18. The following program was presented:

Psychodynamic Aspects of War and Extenuating Crises—Dr. Howard R. Masters, Richmond.

A Description of the Rorschach Experiment—Dr. James B. Funkhouser, Marion, Va.

Psychoses Amongst Students Requiring Hospitalization—Dr. O. B. Darden, Richmond.

Psychotherapy in Children—Dr. Leo Kanner, Associate Professor of Psychiatry, Johns Hopkins Hospital, Baltimore.

BUNCOMBE COUNTY MEDICAL SOCIETY

On June 2 Dr. Karl Schaffle presented a paper on "Pulmonary Hemorrhage" before the Buncombe County Medical Society. The discussion of the paper was opened by Dr. S. M. Bittinger and Dr. I. R. Wagner. Following the meeting a motion picture was shown. On June 16 the Buncombe County Medical Society were the guests of the Biltmore Dairy Farms at a barbecue dinner. After the dinner a scientific program was presented by the doctors of veterinary medicine of Biltmore.

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society met at the City Memorial Hospital, Winston-Salem, on June 11. Dr. R. L. Wall spoke on "The Choice of an Anesthetic"; Dr. G. C. Cooke gave a paper on "Spinal Anesthesia"; and Dr. John A. Rose gave a brief talk on the Winston-Salem Child Guidance Clinic.

MECKLENBURG COUNTY MEDICAL SOCIETY

The Mecklenburg County Medical Society held its last meeting of the summer on June 3. Dr. J. G. Johnston gave a paper on "Sub-Conjunctival Injections in Diseases of the Eye", and Dr. Roy B. McKnight spoke on "The Goitre Problem".

ASHEVILLE MENTAL HYGIENE CLINIC

The first Mental Hygiene Clinic to be held in Asheville was conducted by Dr. D. J. Sullivan recently. The movement resulted from the recent visit of Dr. James Watson, of the State Board of Charities and Public Welfare. Dr. C. N. Sisk and Dr. Margery Lord are on the committee.

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

One of the many responsibilities that the National Foundation for Infantile Paralysis has assumed as an invaluable aid to infantile paralysis patients in the acute stages is the free distribution of Toronto splints and Bradford frames in epidemic areas and to indigent persons, regardless of age, who may need them. Over 3,000 of these appliances have been used during the past two years and our central supply depot in New York City is ready to meet any future deserving requests for these splints and frames.

There is no charge for these splints and frames except expressage and they can be obtained upon the request of any County Chapter officer or responsible person in the medical profession. Address all correspondence to the National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York.

REJECTIONS AT THE INDUCTION STATION, FORT BRAGG

The leading causes for rejections at the induction station for May, 1941, are shown in the table below. The rejection rate for white registrants appears to be approaching an optimum.

Number	May 1941		Total
	White	Colored	
Examined . .	915	1248	2163
Number Rejected . .	81 (8.7%)	246 (19.7%)	327 (15%)
1. Venereal Disease . . .	4	125	129
G. C. . .	(3)	(119)	(122)
Chancroid . .	(0)	(4)	(4)
Chancre . .	(1)	(2)	(3)
2. Insufficient Vision . . .	16	23	39
3. Pes Planus . .	5	19	24
4. Otitis Media, Chr. Sup. . .	13	4	17
5. Insufficient Teeth	6	4	10
6. Hernia, Inguinal . .	3	6	9
7. Varicose Veins	6	1	7
8. Pulmonary Tuberculosis . .	0	6	6
	53	188	241

NEWS NOTES

Several North Carolina doctors appeared on the program of the A.M.A. meeting in Cleveland. Dr. E. C. Hamblen of Durham gave a paper on the "Uses and Limitations of Estrogens in Gynecic Practice" before the Section on Obstetrics and Gynecology. Dr. Julian M. Ruffin of Durham spoke on the "Diagnosis and Treatment of Mild Vitamin Deficiencies" before the Section on Pharmacology and Therapeutics. "An Evaluation of Emotional Factors in Neurodermatitis" by Dr. Maurice H. Greenhill of Durham and Dr. Jacob E. Finesinger of Boston was given before the Section on Nervous and Mental Diseases. Dr. Lenox D. Baker and Dr. Chester H. Waters, Jr., of Durham, gave a paper on "Vitallium Cup Arthroplasty of the Hip" before the Section on Orthopedic Surgery. Dr. John R. Williams of Winston-Salem and Dr. Edwin P. Alvey of Durham were discussants of papers.

Dr. Robert J. Reeves of Duke University had an exhibit on Bronchomycosis, and Dr. Harry Winkler of Charlotte took part in the special exhibits on Fractures and Lamé Backs.

* * *

Dr. Raymond S. Crispell, of the Duke Hospital, has been ordered to active duty in the U. S. Navy at the Naval Air Training Station, Pensacola, Florida. He has obtained a year's leave of absence from Duke University, and he reported to Pensacola June 15, 1941.

As a lieutenant commander in the Medical Corps, Dr. Crispell will teach neuropsychiatry and will participate in the research and in the clinical work in psychology and psychiatry at the Naval School of Aviation Medicine. He will also act as neuropsychiatrist to the Naval Dispensary and Hospital at Pensacola, and in these various capacities he will be engaged in the work that has been done for a number of years in the personality studies associated with the selection and with the fitness of naval aviators.

Dr. Paul Ringer, of Asheville, was guest speaker at a meeting of the St. Louis Medical Society. His address, "Prognosis in Pulmonary Tuberculosis", is published in the North Carolina Medical Journal this month.

* * *

Dr. William Pitts of Charlotte has been certified by the American Board of Surgery.

* * *

Dr. Robert L. McMillan of Winston-Salem has been certified by the American Board of Internal Medicine.

* * *

Dr. Charles Hartwell Cocke, of Asheville, was unanimously re-elected Chairman of the Board of Governors of the American College of Physicians at its recent meeting in Boston.

* * *

The following doctors from North Carolina were registered at the meeting of the A.M.A. in Cleveland, June 3-6:

Harold J. Abrams, Fort Bragg
 Lenox D. Baker, Durham
 J. Lamar Callaway, Durham
 Williard Cardwell, Greensboro
 Verne S. Caviness, Raleigh
 V. F. Couch, Winston-Salem
 Harry A. Crawford, Fort Bragg
 A. McR. Crouch, Wilmington
 Richard B. Dunn, Greensboro
 Elias S. Faison, Charlotte
 J. C. Pass Fearrington, Winston-Salem
 Ralph L. Fike, Wilson
 Gregory G. Floridis, Fort Bragg
 Robert B. Franklin, Mt. Airy
 T. T. Frost, Winston-Salem
 Lucius G. Gage, Charlotte
 Charles Stedman Glisson, Jr., Fort Bragg
 Maurice H. Greenhill, Durham
 E. C. Hamblen, Durham
 William M. Jennings, Fort Bragg
 Wingate M. Johnson, Winston-Salem
 John P. Kennedy, Charlotte
 William L. Kirby, Winston-Salem
 R. F. Leinbach, Charlotte
 Frank R. Lock, Winston-Salem
 A. W. Makepeace, Chapel Hill
 E. M. Mann, Moyock
 Frank B. Marsh, Salisbury
 Wm. deB. MacNider, Chapel Hill
 Ross S. McElwee, Statesville
 Robert L. McMillan, Winston-Salem
 Clement R. Monroe, Pinehurst
 Robert P. Morehead, Wake Forest
 Edward S. Orgain, Durham
 R. B. Outland, Rich Square
 Elbert L. Persons, Durham
 David M. Pipes, Greensboro
 Richard Z. Query, Jr., Charlotte
 William T. Rainey, Fayetteville
 Robert J. Reeves, Durham
 Julian M. Ruffin, Durham
 Hillis L. Seay, Huntersville
 James Watson, Raleigh
 William E. Westcott, Asheville
 B. B. Wetcler, Fort Bragg
 Harry Winkler, Charlotte.

* * *

The following changes in addresses of members of the North Carolina Medical Society have been received during the past three months.

Dr. Alfred Blumberg, from Asheville to Box 706, Morganton.
 Dr. W. A. Brewton, from Enka to Fort Jackson, S. C.
 Dr. C. S. Britt, from Charlotte to Beaufort, S. C.

AUXILIARY

A MESSAGE FROM THE PRESIDENT

Nature provides periods of rest for all living things. In successive cycles there are seasons for action and growth and seasons when growth is dormant. We do well as human beings to follow Nature's example—to enjoy a period of rest and relaxation during the summer months when initiative is low; to lay aside as many responsibilities as possible; to clear our minds of controversy and confusion. We may then return to our duties in the fall refreshed and renewed, both physically and mentally.

It is for this reason that I shall only briefly mention future plans for the Auxiliary to the Medical Society of the State of North Carolina. These will involve work on the part of all members of the Auxiliary and work has no place in our summer vacation if it can be avoided. Suffice it to say that these plans will take shape during the summer months as the officers of the Auxiliary jog along, doing a little correspondence on the side.

Our program for the coming season assumed very promising proportions when the councillors met with the new and retiring presidents of the State Auxiliary following the annual meeting in Pinehurst in May. A spirit of willingness and cooperation was shown at that meeting which will have far-reaching effects this fall—a spirit which will touch the wife of every doctor belonging to the State Medical Society. If the determination of the officers of the Auxiliary prevails, there will eventually be an auxiliary in every county in North Carolina having an organized county medical society. For the program of the Auxiliary is expanding in ever widening circles; its appeal cannot be escaped by any doctor's wife concerned with her husband's career.

The Auxiliary is carrying the fight against regimentation to the most telling sources. Under the guidance of the American Medical Association it is teaching its members where, when and how to speak against socialized medicine in informal conversation (how insidious is the grapevine system!) and how to obtain authorized medical speakers for women's lay groups.

In addition to presenting the attitudes and aims of the American Medical Association on the national health issues, the Auxiliary has a complete program designed to spread

- Dr. Raymond S. Crispell, from Duke University to Dispensary, N.A.S., Pensacola, Fla.
 Dr. J. P. Davis, from Winston-Salem to Station Hospital, Fort Livingston, La.
 Dr. W. D. Farmer, from Durham to Box 1227, Greensboro.
 Dr. W. H. Flythe, from Norwood to Washington
 Dr. N. A. Fox, from Greensboro to Fort Screven, Georgia.
 Dr. G. C. Godwin, from Sanatorium to Roanoke Hospital, Roanoke, Va.
 Dr. W. D. Hall, from State Hospital, Raleigh, to Roanoke Rapids.
 Dr. F. T. Harper, from Sanatorium to Burlington.
 Dr. I. E. Harris, Jr., from Durham to 2908 Stratford Road, Columbia, S. C.
 Dr. O. J. Hart, from Winston-Salem to Station Hospital, Camp Beauregard, Alexandria, La.
 Dr. Felda Hightower, from Raleigh to Winston-Salem.
 Dr. Albert F. Lee, from Duke Hospital to Maynard Hospital, Seattle, Wash.
 Dr. G. M. Leiby, from Raleigh to District Health Department, Washington, D. C.
 Dr. W. G. Lewis, from Fort Benning, Ga., to Camp Blandig, Fla.
 Dr. J. S. Liverman, from Winterville to Lexington, S. C.
 Dr. L. B. Miller, from Raleigh to 123 Elsmere Place, San Antonio, Texas.
 Dr. P. R. MacFadyen, Jr., from Concord to Rockingham.
 Dr. George A. Sotirion, from Cincinnati, Ohio, to Duke Hospital, Durham.
 Dr. Roy C. Tatum, from Fort Bragg to First Military Area, Knoxville, Tenn.
 Dr. H. M. Vann, from Wake Forest to Bowman Gray School of Medicine, Winston-Salem.

Dr. Alonzo Myers announces the removal of his offices to Suite 424 Professional Building, Charlotte, N. C.

The Holland-Rantos Company have been appointed exclusive distributors for Rantex, the newest development for surgical masks and caps—a patented fibre product which is insoluble in live steam, boiling water or common solvents. A magnification of Rantex shows that it is 176 times more protective than a single layer of gauze. As a result, it provides masks and caps which are exceptionally cool, comfortable, light and free from irritating lint or yarn. They are inexpensive enough to be discarded after a single use; yet they can be autoclaved or sterilized.

The masks are shaped to fit the face; the caps are well tailored. The masks and caps are already being used in many hospitals—including Doctors Hospital in New York, University of Pennsylvania Graduate Hospital in Philadelphia, United States Marine Hospital in Boston, Wisconsin General Hospital, University of Wisconsin in Madison, Wisconsin, and the East Oakland Hospital in Oakland, California.

New Searle Laboratories to be Built at Skokie, Ill.

The well-known pharmaceutical manufacturing house of G. D. Searle and Co., Chicago, announce that work has been started on the building of their new laboratories and plant, which are located on the outskirts of Chicago, in the Skokie district.

the gospel of preventive medicine by acquainting the public with the means of acquiring authentic information on health. Members throughout the United States have pursued a program of study and action in behalf of cancer control, tuberculosis, maternal and child health, milk supply in local counties, syphilis, immunization, communicable diseases and care of crippled children. It is significant that the most popular subjects with Auxiliary members during the past year, however, were the Wagner Health Bill and other medical legislation.

In North Carolina the Auxiliary program is enlarged to include philanthropies. The doctors' wives maintain two beds in State tubercular sanatoriums; they are raising a ten thousand dollar endowment fund for the oldest of these beds and are maintaining a Student Loan Fund which is constantly in use by sons and daughters of doctors for whom it was designed, to aid in completing college educations in instances when this might otherwise have been impossible.

Lives there a doctor who would deny the necessity of any branch of this program? The answer is obvious. We would therefore ask every member of the Medical Society of the State of North Carolina to take a personal interest in our organization, to urge their wives to membership when we resume activities in October. If a doctor has no wife we will welcome any representative of his choice—a mother, a sister, a daughter. Only one requirement, doctors—she must be a woman zealously interested in American medicine for the American way of life and willing to learn how and where she may best serve its interests!

MRS. SIDNEY SMITH, *President*
Auxiliary to the Medical Society
of the State of North Carolina.

BOOK REVIEWS

Textbook of Pediatrics... Third Edition. By J. P. Crozer Griffith, M.D., Ph. D. Emeritus Professor of Pediatrics, University of Pennsylvania; and A. Graeme Mitchell, M.D., B. K. Rachford Professor of Pediatrics, College of Medicine, University of Cincinnati. 991 pages, with 220 illustrations. Price, \$10.00. Philadelphia: W. B. Saunders and Co., 1941.

This textbook represents a revision of the authors' previous volume **Diseases of Infants and Children**. The new title, **Textbook of Pediatrics**, emphasizes the authors' belief that the care of children embraces much more than the study and care of children's "diseases". This volume, published just before the recent death of Dr. Mitchell, was completely revised by him, and the various sections were submitted for criticism to an imposing group of authorities listed in the front of the book. Much new material has been added, including an excellent, although short chapter on mental development and a new section on poisoning.

The sections dealing with nutrition and infant feeding have been rewritten and brought in line with the latest knowledge in regard to nutritional requirements, including vitamin therapy. A valuable series of tables show the essential differences in most of the proprietary foods and milk preparations with which one deals in feeding infants.

An outstanding feature of this textbook is the numerous clear tables and figures. Those on physical and mental growth are particularly valuable as a guide to the individual appraisal of growth and development.

This book is very complete in that it discusses all phases of the normal and abnormal child. Although it is hard to agree with the authors that a 991 page book is "streamlined", the one criticism that can be made is that in the desire to make the textbook complete in one volume, discussions of certain subjects have been made too brief. However, as a textbook, it should prove to be very valuable for practicing physicians as well as for medical students.

The Doctor and the Difficult Child. By William Moodie, M.D., F.R.C.P., D.P.M., Medical Director, London Child Guidance Clinic and Training Clinic. 214 pages. Price \$1.50. New York: The Commonwealth Fund, 1940.

With the increasing emphasis placed upon the recognition and treatment of behavior problems in children it is refreshing to have such a book upon the subject as Dr. Moodie's. His long experience in dealing with difficult children guarantees that it is authoritative. It is written in the simple, chatty, conversational style which the cultured Englishman uses so well. The object of the book is expressed by the author in the introduction: "This is not a scientific treatise; it is rather an informal discussion of fundamental disturbances of behaviour or personality in children and how they can be recognized, investigated and treated." The author lives up to this promise so well that the book can be recommended to any doctor who wants to learn more about dealing with the various problems of childhood.

For Shy, Nervous, Retarded Children

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Mrs. J. Bascom Thompson, *Principal*

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Free Union, Virginia



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SOME OBSERVATIONS DRAWN FROM A SERIES OF FIVE HUNDRED CONSECUTIVE THYROIDECTOMIES

ROY B. MCKNIGHT, M. D.
CHARLOTTE

While this series of 500 consecutive thyroidectomies has not been subjected to any detailed analysis, there are a few general observations I want to bring before this surgical group in a rather rambling talk, which I hope will be of some interest, and, perhaps, of some value to those of you really interested in the surgical treatment of thyroid dysfunction.

Note the deliberate use of the term "dysfunction". Perhaps we can get a better and clearer conception of what we commonly refer to as thyroid disease of a goitrous nature, if we will consider it as a biochemical and physiologic dysfunction, not only of the thyroid gland itself, but also of the other elements of the general endocrine system—not necessarily instead of, but in addition to, diffuse or nodular enlargement of the thyroid. Let us not focus our attention entirely on the text-book picture of the skinny, "pop-eyed" woman with an enormous enlargement of the thyroid and the caption, "Graves' Disease", underneath. It is true that we frequently see this picture among our cases, but it is a late condition, and somebody has likely blundered in failing to make an earlier diagnosis. Let us consider also the small, barely palpable gland which may be the seat of a parenchymatous hyperplasia with the high columnar epithelium and papillary-like projections into the acini presenting the histologic picture of toxic diffuse goiter, and associated with the clinical features with which you are familiar. Of equal importance is the small toxic nodule

so placed in the gland that it cannot be palpated. These early conditions should be recognized in the light of our modern diagnostic acumen, and we must realize that these, too, are "goiters". In these small, barely palpable hyperplasias, just as in the large, well developed ones, there is secreted a toxic substance the exact nature of which is not at all clear. Neither is it clear what role the secretion of the thymus, the thyrotropic hormone of the anterior pituitary—possibly other hormones of the same body—the hormones of the male or female gonads, or of the adrenal, may play in thyroid dysfunction and enlargement. It is a subject of fascinating conjecture and opens a tremendous field for research, which, indeed, is being extensively explored.

It is not necessary that there be a large gland, seen and diagnosed at a glance, for the physician to recognize a goiter. It may be that the small gland with little or no palpable enlargement is the seat of the patient's trouble. Patients frequently express incredulity when told that they have a goiter, and, in many instances, should undergo thyroidectomy. Today, fortunately, many of these cases are being recognized and treated long before the classical text-book picture appears. The large colloid goiters, or the non-toxic nodular enlargements, on the other hand, may give rise to no clinical symptoms other than those of pressure. How far can we go in explaining the toxicity or non-toxicity of these tumors in our meager knowledge of the endocrines or circulating hormones? A general observation I would leave with you is that goiter should be considered not merely an enlargement of the

thyroid gland, perhaps not a disease of the thyroid gland alone, but as a biologic and physiologic dysfunction of the great and not clearly understood endocrine system of the body, frequently expressing itself in the objective findings of thyroid enlargement. I believe that the more cases we see and the more we study the various types and phases of thyroid and metabolic disturbances, the more this fact must be impressed upon us.

The so-called physiologic hypertrophies frequently seen in girls, and sometimes in boys, at puberty, are not always the soft, innocent, unimportant "adolescent goiters" that we usually expect. Every now and then one is toxic, and will show on pathologic examination the histologic picture of an early or even a well developed parenchymatous hyperplasia. Any symptoms in these youngsters suggestive of unproven tuberculosis, undulant fever, "adolescent nervousness" and so on, may be those of a thyrotoxicemia. It is incumbent on the family doctor or pediatrician to recognize such conditions before serious cardiovascular damage is done. I am not referring to the frank exophthalmic, toxic diffuse goiters of childhood, nor to the nodular goiters, adenomas, which are sometimes seen in adolescents. I am referring to the relatively infrequent hyperplasias occurring in the so-called physiologic hypertrophies of childhood at the adolescent stage of life. Hyperplasia and hypertrophy are not synonymous terms!

These hyperplasias may occur during puberty, pregnancy or lactation. A 14 year old girl on whom I had performed an appendectomy had a definite thyroid enlargement of puberty. There were no symptoms of thyrotoxicemia. She married young—at about 16 years—and promptly became pregnant and went through her pregnancy with no additional enlargement of her thyroid and no symptoms of thyrotoxicemia. Within a year after delivery she became pregnant again and during this pregnancy developed a frank toxic diffuse goiter with a consistent metabolic rate of + 35 to + 40. Following her second delivery the condition regressed somewhat, but she still has a toxic goiter, with a metabolic rate of around + 25 and characteristic clinical symptoms. She has not submitted to operation. Another case in point: A multipara in her thirties had no signs or symptoms of thyrotoxicosis, nor was there any appreciable enlargement of the thyroid. During late pregnancy she de-

veloped thyrotoxicosis with a sizable struma. Her metabolic rate was + 45. She was treated conservatively, and after delivery the symptoms of thyrotoxicemia disappeared and the struma has regressed until it is about normal size. Why is the incidence of abortion following thyroidectomy during pregnancy so high as compared with other operations, even those in the pelvis, during pregnancy?

Means and his co-workers in Boston recently reported a series of cases of what they term "malignant exophthalmos". These were carefully selected from a large series of exophthalmic or toxic diffuse goiters. They are usually less toxic than one would expect from the eye signs. They respond poorly to surgery and in many instances the exophthalmos does not regress but becomes progressive after operation. This series was reported in detail at the recent meeting of the American Association for the Study of Goiter in Boston, and elicited quite a discussion. I shall not take up the diagnosis and treatment of such conditions, but simply want to mention them in passing and to say that I have one such case in my own series. Means's paper will appear in the Transactions of the American Association for the Study of Goiter.

Let me emphasize again, at the risk of too frequent repetition, that the thyroid is one member of the intricate and complex endocrine system; it is a single organ of this system, the physiology and chemistry of which are by no means clear. There are many instances of aberrant function of the thyroid and associated organs which we cannot yet explain; in spite of the voluminous literature we are as yet in virgin territory, and more must be learned before we can attempt to explain many phenomena we see every week. I was rather surprised to see in print recently the statement of an eminent and excellent eastern surgeon that the physiology of the thyroid was now well understood! I do not believe he meant just that. One must be able to explain the altered physiology and chemistry associated with the cases just mentioned, for example, and to correlate such alterations with the histologic pictures before one can say that the physiology of the thyroid is well understood. Undoubtedly the physiology of the normal thyroid is as well, if not better, understood than that of the other endocrines; but I doubt if one can say with finality that he

understands the physiology of the normal thyroid unless he understands that of many other organs of the body—so closely connected they are.

Never tell a patient who has a small non-toxic goiter that it is not harming her, and to forget about it until there is "more reason to have a mutilating operation(!) performed on your neck." Certainly the experienced surgeon would never make such a statement. But I have had patients who had been given this advice by our medical and pediatric friends. I am sure that they were sincere in offering such advice, and I am also sure that they were not acquainted with the fact that malignancy of the thyroid very seldom occurs except in the non-toxic or mildly toxic adenomas (metastases excepted). It is likely that the incidence of malignancy in such adenomas lies somewhere between 5 and 10 per cent. The following cases are illustrative: (1) A 15 year old girl had a non-toxic adenoma which at operation was found to be definitely encapsulated. The histologic pathology was that of malignant papillary carcinoma in adenoma. (2) A 65 year old woman had a small adenoma for some years. She refused operation because "it was inconsequential". Three months before her death x-ray of the chest showed extensive metastases. She never had any symptoms of thyrotoxicosis, and little, if any, detectable change in the size of the adenoma. This was undoubtedly a malignant adenoma invading a blood vessel and metastasizing through the blood stream to the lungs. (3) A lovely little 8 year old girl has a hard nodule about the size of a marble in her thyroid. There are no symptoms of thyrotoxicosis. Operation has been urged, but deferred because "it is not toxic". This is likely a fetal adenoma and may not be malignant, but I do not know. I do not know any more than I know whether or not the lump in a breast is cancer. This I do know: that malignancy of the thyroid seldom occurs except in non-toxic or mildly toxic nodular goiters, and that the percentage of malignancies in this type of goiter is high! I shall not classify malignancies of the thyroid—you are familiar with the various classifications—but I do want to emphasize again and again that all nodular goiters are surgical problems: those toxic for obvious reasons; those non-toxic or mildly so because of the high percentage of malignancies, not to mention the

likelihood of their becoming toxic or malignant.

A study of the mortality and morbidity in this series of 500 consecutive thyroidectomies is interesting. There has been but one death; this was due to bilateral pulmonary infarction. A roentgenogram taken shortly before death on the fifth postoperative day reveals this in excellent detail. So far as I know, there has been but one case of bilateral abductor cord paralysis which was permanent. This patient died in labor something less than two years after thyroidectomy. There have been several who have showed some huskiness of the voice for a period of a few days to a few weeks after operation; these cases have all cleared up, so far as I can determine. This temporary involvement is likely due to stretching of the recurrent nerve in rotating the lobe, or perhaps to temporary clamping. In my hands it has seldom occurred. One patient had had thyroidectomy performed elsewhere on one lobe, and came to me with a large nodular goiter of the remaining lobe. It is important that all goiter cases have a laryngoscopic examination of the cords both before and after operation, and it is almost imperative that such an examination be done in cases that have had previous thyroidectomy. Examination of this patient's cords did show some evidence of nerve injury on the previously operated side. After operation there was no evidence of additional involvement and she was dismissed from the hospital improved. Some months later she returned with definite huskiness of the voice and evidence of nerve involvement on the recently operated side. In all likelihood this was due to scar tissue impinging on the recurrent nerve. Re-operation was advised and refused. I do not know what has become of her, as she lived in a distant city and has not returned.

Three patients had severe postoperative hemorrhages necessitating prompt evacuation of the clots. All recovered. Incidentally, this is a most dangerous complication and one which will cause a quick death from asphyxia unless it is promptly and properly handled. It is amazing how small a hemorrhage is necessary to place the patient in a precarious condition.

Most of my very toxic patients are operated on three to five days after they are first seen. We have a method of intravenous

iodine medication which works rapidly, thereby avoiding the usual several weeks of preoperative treatment. This method has not as yet been reported, but it will be published in detail as soon as some experimental work with mice has been completed. It is rare that very toxic patients, even those with metabolic rates of + 60, +80 or even + 100, undergo more than five days' preoperative preparation!

Except for the rare postoperative complications these patients have all been dismissed from the hospital on the fourth or fifth postoperative day—sometimes on the third. There has been no instance of severe wound infection.

The evaluation of the basal metabolic studies, and the correlation of the clinical findings and such laboratory studies as the hippuric acid test, cholesterol content of the blood, galactose tolerance determinations, etc., and the response to treatment expressed in terms of the above is a subject unto itself and cannot be taken up in this presentation. The same is true of operative technique and pathological detail.

Abstract of Discussion

Chairman Lyday: Dr. Cobb, will you open the discussion on Dr. McKnight's very interesting paper?

Dr. Donnell B. Cobb, Goldsboro: I enjoyed what Dr. McKnight had to say, and I think he struck a very important note in stressing the possibility of malignancy occurring in these adenomatous growths imbedded deep in the thyroid gland. I do not think we ought, when patients have a normal metabolism or even a low metabolism, to conclude that the growths are innocuous and tell any patient not to bother it until it bothers him. I think I have seen the incidence quoted as 12 per cent; therefore these growths must be regarded as dangerous.

I should like to ask Dr. McKnight to state, in closing, if he has had to use the two-stage operation in achieving such a low mortality rate, and, if he does use the two-stage operation, how long he thinks it advisable to wait between the two operations.

Dr. Foy Roberson, Durham: I wish that Dr. McKnight would give us a review of what he does in the three or four days to get patients ready for operation.

Dr. McKnight: In reply to Dr. Cobb: In this entire series I have performed the two-stage operation only once, so I cannot say much about it from personal experience. With our method of preparing patients, particularly those severely thyrotoxic, we believe it is seldom indicated. I know that it is unusual to report a series this large in which many of the cases were quite thyrotoxic, with only one two-stage operation and only one death, and that from bilateral pulmonary infarction! The one case in which the two-stage operation was used was a recurrence following thyroidectomy some years ago by another surgeon. I was concerned about the patient's cords although laryngoscopic examination revealed them not in the cadaveric position. She had

responded nicely to preoperative preparation, and only because of a tedious and prolonged dissection was the operation done in two stages. During convalescence following the first stage, the cords were found to be normal; I wished then that I had proceeded with a one stage operation.

Dr. Roberson whispered to me, before stating his query, that he was going to make me tell how these patients were prepared! I am glad to do so, although I am not yet ready to report this work in detail. Clinically it is sound, in my opinion, and has proven so. We propose to do some experimental work with mice in the hope of securing some additional pathological data before a formal and detailed report is made. In brief, our method is this: These toxic patients are put to bed at absolute rest, sedation is given as needed (it is seldom needed after the first or second injection), a high caloric diet is administered, and—most important—a daily intravenous injection of 500 to 1000 cc. of 10 per cent glucose or dextrose with 100 to 150 minims of Organidine is given. After the second or third injection metabolic studies are repeated. The clinical picture of improvement is the chief criterion for operation, however. It is unusual to keep a patient under preparation more than five days, and the big majority are operated on by the third or fourth day after treatment is begun. Recently I operated on a 54 year old woman whose metabolism was checked with different machines at + 109. The fourth day—after three injections—her metabolism was checked at + 38 and + 40; another injection was given and thyroidectomy was performed the fifth day after admission. She was dismissed from the hospital on the fourth postoperative day after a perfectly smooth and normal convalescence. Many similar cases with initial metabolic findings of + 40, 50, 70, or higher, can be cited.

This treatment is not "fool-proof". There are various factors to be weighed. The dosage should vary with the individual case. Careful studies are essential: the hippuric acid test of liver function, the cholesterol content of the blood, galactose tolerance determinations, basal metabolic rates, and—the most important of all—the clinical evaluation of the patient and its correlation with laboratory data. All these are important, and their use in this treatment will be presented later.

I thank both Dr. Cobb and Dr. Roberson for their remarks.

The Physical Signs of Cardiovascular Syphilis.—

The physical signs of cardiovascular syphilis are the signs of syphilitic aortitis, with or without its complications. The principal symptoms and signs of uncomplicated syphilitic aortitis, recorded in the cases of the Co-operative Clinical Group material, are as follows, in the order of their importance: teleroentgenographic and fluoroscopic evidence of aortic dilatation; a tympanitic, bell-like, tambour accentuation of the aortic second sound; a history of circulatory embarrassment; increased retromammary dullness, progressive cardiac failure, substernal pain, paroxysmal dyspnea, systolic aortic murmur and visibly or palpably increased pulsation in the episternal notch. Moore and his associates believe that the presence of three or more of the first seven of these signs or symptoms in a patient with known late syphilis under fifty years of age is strong evidence for the diagnosis of uncomplicated syphilitic aortitis, and that the presence of any two of them renders the diagnosis probable.—Herrman L. Blumgart, M.D.: *The Detection and Treatment of Cardiovascular Syphilis*, New England J. Med. 223:444 (September 19) 1940.

BREECH DELIVERY

THOMAS D. TYSON, JR., M. D.

Burrus Clinic

HIGH POINT

Breech presentation occurs about three times in every 100 deliveries. Last August, however, I had five breech deliveries in primiparas, out of eight deliveries during the month. Those five almost consecutive breech presentations in primiparas aroused my interest in the subject, and since then I have reviewed a considerable amount of the recent literature pertaining to this type of presentation⁽¹⁾.

There are numerous theories as to the cause of breech presentations. A contracted pelvis, placenta praevia, or pelvic neoplasm may be the etiological factor. Unfortunately there is no apparent reason for the majority of these presentations, but the fact that the above abnormalities can cause the fetus to present by breech gives rise to some apprehension in such cases. A breech delivery in a primipara can occasionally be the most difficult of all obstetrical procedures. Some one has said: "Observe a doctor deliver a breech and you can very readily measure his obstetrical ability."

The danger to the child is about three times greater in breech than in vertex presentations. Figures as to the fetal mortality vary with different clinics, but the general uncorrected mortality rate is between 10 and 15 per cent—approximately the same as that for all deliveries in elderly primiparas. The maternal mortality is not appreciably greater in breech presentations, but the maternal morbidity and the possibility of trauma to the pelvic structures is certainly greater than in vertex presentations.

Before attempting to describe the method of delivery in breech presentations I shall discuss the subject of prophylaxis. In reviewing the literature I have found that most authors strongly recommend external version when possible, usually in the last eight to

ten weeks, or at the onset of labor. In approximately 30 to 60 per cent of cases the baby will revert to its original position; however, another attempt at version may be made. I am not enthusiastic about the routine use of this procedure. When the mother has a contracted pelvis, I think that every attempt should be made to do an external version, so that cephalo-pelvic disproportion if present may be evaluated early in labor. However, if the mother has a normal pelvis and the baby is of average size, and there is no reason to anticipate difficulty in delivery, I prefer to leave the baby in its original position. While the danger of rupturing the membranes and causing prolapse of the cord may not be great, there is a definite possibility of its occurrence. The other arguments against external manipulation—namely, the danger of detaching the placenta and winding the cord around the infant's neck or extremities—are to my mind not so important.

In studying the recent publications I have found little ground for my fears of doing an external version. However, this idea has been instilled into me by an older man with a vast obstetrical experience, and it is a little difficult for me to get away from his training.

The first and most important cause of infant mortality in breech deliveries is intracranial injury. This is one factor that we should be able to do something about. With sound obstetrical judgment and reasonable skill in delivery, the incidence of birth trauma should be kept at a minimum. The routine use of vitamin K to expectant mothers in the last month of pregnancy may afford another means of decreasing intracranial hemorrhage.

Prematurity occurs more frequently in breech presentations, and is the etiological factor in a large number of these deaths. One of the causes of prematurity in breech presentations is premature rupture of the membranes.

Prolapse of the cord is another hazard of breech presentations. In a review of 1242 cases of breech delivery in the Boston Lying-In Hospital, Goethals^(1c) states that prolapse of the cord occurs five times more frequently in breech presentations than in all types of deliveries. He also states that placenta praevia occurs three times more often and premature separation of the placenta five times more often. However, intracranial

1. (a) Danforth, W. C. and Galloway, Charles Edwin, in *Am. J. Obst. and Gynec.* 35:123, 1938.
- (b) Davis, Ed. M., in *Surg. Clin. North America*, 12:1193-1205, 1932.
- (c) Goethals, T. R., in *Surg., Gynec. and Obst.* 62:535, 1936.
- (d) Mengert, Wm. F., Jr., in *J. Iowa M. Soc.* 28:478, 1935.
- (e) Mohler, Ray W., in *Am. J. Obst. and Gynec.* 36:400, 1938.
- (f) Morton, Daniel Green, in *Am. J. Obst. and Gynec.* 24:853, 1932.
- (g) Potter, Milton G., in *Am. J. Obst. and Gynec.* 37:2675, 1939.
- (h) Williamson, Herbey C., in *Am. J. Surg.* 33:386, 1937.

hemorrhage is still the most important cause of infant mortality and the one in which there is the greatest hope for prevention.

It is a good policy to have all patients with breech presentations come into the hospital for delivery. While a fair number of the babies will be born spontaneously, one cannot predict in which cases there will be trouble, particularly with the after-coming head or extended arms.

The patient should be kept in bed during the first stage of labor in order to keep the membranes intact as long as possible. Induction of labor by any mechanical means is hazardous and should not be employed unless one is compelled to do so in the interest of the mother. The patient should be given plenty of fluids and readily digestible carbohydrates during the early part of labor. The usual sedatives may be given if labor seems to be progressing normally. The ideal outcome of the first stage of labor is to have a large bag of forewaters develop and remain intact until the lower uterine segment is effaced and the external os completely dilated. Often, however, the membranes rupture before the onset of labor and one finds on examination a rigid cervix. This may mean a long, desultory type of labor. Occasionally, but very occasionally, in a case of this kind with irregular ineffectual pains, the use of a hydrostatic bag is of value. This should not be used until every recognized attempt at medical induction has been tried. The danger of infection by insertion of a bag is to be considered, as is the possibility of getting a more abnormal presentation or prolapse of the cord.

Under no circumstances should the delivery be attempted until the lower uterine segment is effaced and the cervix fully dilated. Potter⁽¹⁸⁾ emphasizes the effacement of the lower uterine segment and states that quite frequently the external os may not be completely retracted over the breech and yet gentle manipulation, with the patient under anesthesia, causes the cervix to melt away. In his dexterous hands that procedure may be safe, but generally speaking no attempt should be made to deliver a breech until the external os is fully dilated and retracted. If the cervix is incompletely dilated, the arms will certainly be extended.

There is a definite school of thought, which I believe originated at the Boston Lying-In Hospital, in which immediate breech extraction is advocated when the cervix reaches full dilatation. Its exponents claim that better

management of the second stage can be obtained in this manner with the patient anesthetized, and that the danger of compression of the cord during the second stage is avoided. These statements are supported by an appreciable reduction in infant mortality. My training has been contrary to this, and I use the following method in breech deliveries: The patient is given inhalation anesthesia with her pains in the second stage and is urged to cooperate to the utmost of her ability. The breech should be forced down to the perineum, and if possible through the orifice at least to a point where the operator can insert a finger into both groins. In primiparas, and especially if the infant is premature, an episiotomy should be done. If the buttocks and legs are not born spontaneously the thighs should be abducted and the legs flexed to facilitate their delivery. The thighs and hips are then grasped with a towel and gentle traction applied downward until the angle of the anterior scapula is visible. At this point the trunk is rotated slightly so that the bisacromial diameter of the child is brought into approximation with the anteroposterior diameter of the pelvic outlet. The patient is then completely anesthetized, and the angle of the anterior scapula is grasped and pushed anteriorly under the symphysis. Quite frequently this procedure alone will deliver the anterior arm. If not, two fingers are passed into the vagina and hooked into the angle of the elbow, and the infant's arm is swept down over the chest. The posterior arm is delivered posteriorly in the same manner. At this stage the baby's body should be placed astride the operator's forearm and one finger of the same hand placed in the baby's mouth. No traction should ever be made with this finger beyond that necessary to secure flexion of the head. With the operator's free hand gentle pressure is applied to the head above the symphysis until it enters the pelvic cavity. Quite frequently, particularly after a liberal episiotomy has been done, the pressure from above, combined with the gentle traction in the infant's mouth, is all that is necessary to deliver the head. If, however, this does not suffice, slight traction downward on the baby's shoulders followed by a slight upward pull on the body will allow the head to escape readily. If the Piper forceps are to be used on the after-coming head, it is very important that the head be in the pelvis and in an anteroposterior position.

Roberts⁽¹⁾, Alyea, Daniel, and Harris⁽²⁾, and Culp⁽³⁾. Changing the drug as advised by Alyea and Roberts⁽¹⁾, and giving the patient several courses of drug therapy with intervening rest periods as proposed by Alyea and Daniel⁽⁴⁾ also failed to bring about improvement.

The failure in treatment suggested that the infecting organisms were sulfonamide-fast, and *in vitro* experiments were carried out which included the three drugs employed clinically and five other related compounds. The technique followed in the *in vitro* studies has been described elsewhere⁽⁵⁾. No inhibiting effect on the growth of this strain of *N. gonorrhoeae* was obtained *in vitro* in concentrations of the drug which could be maintained in the body (fig. 2).

DRUG CONCENTRATION *	MG. %							
	30	25	20	15	10	7.5	5.0	2.5
SULFANILAMIDE	++++	++++	++++	++++	++++			++++
SODIUM SULFAPYRIMIDINE	++++	++++	++++	++++	++++			++++
SODIUM SULFATHIAZOLE	++++	++++	++++	++++	++++			++++
SODIUM SULFADIAZINE	++++	++++	++++	++++	++++			++++
SULFAPYRIMIDINE					++++	++++	++++	++++
SULFATHIAZOLE					++++	++++	++++	++++
SULFADIAZINE					++++	++++	++++	++++
SULFANILYL-SULFANILAMIDE					++++	++++	++++	++++

* MAXIMUM CONCENTRATION USED FOR EACH DRUG WAS THE GREATEST THAT COULD BE MAINTAINED IN VIVO HEAVY GROWTH IS REPRESENTED BY ++++

Fig. 2. Growth of organisms in media containing various sulfonamide drugs.

The thermal death times of the organisms (fig. 3) were determined by the method of Carpenter, Boak, Mucci, and Warren⁽⁶⁾. Because these death times indicated that intravenous typhoid or mercurochrome would induce an insufficient hyperpyrexia, intravenous fever therapy was not employed in treating this patient. The "hot box" was not used because of the serious dangers involved, and because the infection seemed to respond to the less heroic measure of urethral instillations.

The patient was treated with urethral instillations of acriflavine for twelve days, and

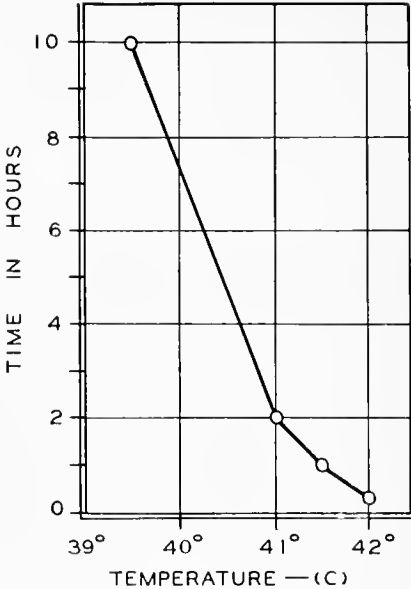


Fig. 3. Thermal death times of the organisms in vitro.

the urethral discharge ceased. The urine was then examined daily, and remained free of organisms. All therapy was then discontinued, and the patient was discharged from the hospital.

The patient was seen again sixteen and thirty days after the urethral discharge had first disappeared, and at those times there was no urethral discharge and the urine and prostatic secretion were negative.

Summary

A case is reported of gonorrheal urethritis persisting for fourteen weeks in which *in vivo* and *in vitro* studies demonstrated the infecting organisms to be sulfonamide-drug resistant. The patient improved with urethral instillations of acriflavine. This case is offered as a reminder that not all strains of *N. gonorrhoeae* respond readily to sulfonamide drug therapy.

The Treatment of Syphilitic Meningitis.—A patient with syphilitic meningitis should be hospitalized and treated intensively with one of the arsenicals and one of the heavy metals. The cerebrospinal-fluid pressure can be controlled by spinal punctures at appropriate intervals. The arsenical should be administered in proper doses at four-to-six-day intervals, together with the heavy metal intramuscularly and iodides by mouth. Under this regime the symptoms rapidly disappear, the cerebrospinal fluid pressure falls to normal and the swelling of the optic disks subsides.—H. Houston Merritt, M.D.: The Early Clinical and Laboratory Manifestations of Syphilis of the Central Nervous System, *New England J. Med.* 223:448 (September 19) 1940.

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3. Culp, O. S.: Treatment of Gonorrhea with Sulfathiazole, *J. Urol.* 44:367 (September) 1940.
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5. Poston, Mary A., and Orgain, E. S.: The Effect of Sulfanilamide Compounds upon the Growth of Organisms Isolated from Twenty Patients Suffering from Bacterial Endocarditis. In Press.
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THE PREOPERATIVE DISINFECTION OF THE SKIN IN MAJOR SURGERY WITH SEVENTY PER CENT ALCOHOL BY WEIGHT

C. L. HAYWOOD, JR., M. D.

ELKIN

In visiting operating rooms throughout the country, one finds different surgeons using a great many different skin disinfectants for preoperative preparation of the skin for major surgery. When so many different types of disinfectants are used, it would seem that none of them is ideal. I have been interested in this subject for a number of years both from the clinical and from the economic viewpoint. In these days of war, and "all out" for total defense, economy in the operating room is more essential than ever. Where there is a choice of several disinfectants, it would seem the wise thing to do to use the least expensive, all other things being equal. When a new disinfectant is discovered which is more efficient and more economical at the same time, that is so much the better.

Up until 1939, I had been in the habit of using Scott's Solution for preoperative disinfection of the skin. I felt that this solution was equally effective and less harmful than the other agents, judging by my own experience, and by what I could glean from literature. Many of the highly advertised mercurial preparations were somewhat more expensive. (They cost about \$12.00 to \$14.00 a gallon, while Scott's Solution cost us \$9.00 a gallon.) Tincture of iodine, in my opinion, is equally effective and very economical, but some people are so blonde that iodine produces a burn. Picric acid was also an efficient and economic disinfectant, but about 4 per cent of people are allergic to picric acid. Therefore my choice was Scott's Solution.

In October, 1938, Dr. Phillip E. Price published an article entitled "New Studies in Surgical Bacteriology and Surgical Technique, With Special Reference to Disinfection of the Skin."⁽¹⁾ Inasmuch as there had been no quantitative test for determining the degree of disinfection of the skin, it was impossible to determine the exact effectiveness

of any disinfectant because the size of the bacterial flora could not be accurately measured, either before or after the use of any disinfectant. Dr. Price devised an ingenious quantitative method of studying the bacteria of the skin. His method was as follows: He prepared a number of basins of sterile water, and scrubbed the hands and forearms, in the standard manner, for exactly one minute in each basin, one after the other. Bacterial counts were then made on the water in each basin. Washings from each basin were found to contain a diminishing number of bacteria. He plotted the accumulative totals against time and found that this produced a logarithmic curve. By employing several series of basins, he was able to produce curves from which he could evaluate the effectiveness of any particular germicide as compared with scrubbing in the standard manner, and with other germicides. His method permitted much more accurate study of the bacterial flora of the skin than had ever been possible before. He was able to determine the size and the location of the bacterial flora, the mechanism of disinfection and the rate of reestablishment of the usual flora after disinfection. He concluded that the bacterial flora of the normal skin is made up of "transients" and "residents". The "transients", he found, were present in enormous numbers at times, but, as a rule, relatively few are present on grossly clean hands or protected skin. The "transients" were picked up from various extraneous sources and were found to be relatively easy to remove. This was not true of the basic flora. Therefore, tests of germicidal power which utilized bacteria placed on the skin and exposed subsequently to disinfectants would give thoroughly misleading results. Increase in the bacterial flora usually results from the multiplication of the "resident" flora. Decrease is brought about by washing, protection of the clothing, etc. Occasionally "transients" change their status and become "residents". This makes it important to disinfect contaminated hands without undue delay. The resident flora of the surgeon's hands and arms, under ordinary conditions of life, is about eight million organisms. The organisms are located, not in the skin nor in the glands of hair follicles, but on the skin. Some pathogenic germs are in the resident flora, and if the hands are in frequent contact with contaminated objects,

Read before the Eighth District Medical Society, Winston-Salem, April 16, 1941.

1. Price, Phillip E.: New Studies in Surgical Bacteriology and Surgical Technique, J. A. M. A. 3:1093 (November 26) 1938.

a dangerously large number of the "resident" bacteria may be pathogenic. Thus the surgeon may inadvertently become a carrier of virulent organisms. It is important, therefore, for the surgeon to keep his hands out of pus. Scrubbing the hands with warm water and soap was found to reduce the basic flora. The number of bacteria was found to be reduced to practically one-half by each six minutes of scrubbing. The kind of soap made no difference, nor did the temperature of the water influence the rate to any extent. The amount of vigor used in brushing was found to be a very important factor. Sterile water possessed no advantages over tap water.

Alcohol was found to have a very narrow range of effective germicidal concentration, but it was very effective within that narrow range. The maximum germicidal strength both *in vitro* and on the skin, was found to be 70 per cent ethyl alcohol by weight, and not by volume as ordinarily prepared. This concentration of alcohol was found to be more effective than any other hand disinfectant now in general use. Each minute spent in this particular solution was found to have a germ removing effect equivalent to about six and one-half minutes of scrubbing. This effect was considerably increased by friction—for example, by rubbing with gauze or a rough wash cloth. Seventy per cent alcohol by volume was found to be almost worthless. Mercurial preparations were found to coat over the flora and produce a film with a sterile surface, but if the surface film was broken, the original bacterial flora beneath the covering was increased many times, because of the fact that ideal conditions of growth were produced. Kelly's method of hand disinfection with hot saturated solution of potassium permanganate and oxalic acid is very effective; it gives as good results as does twenty or thirty minutes of scrubbing in the standard manner. Saponated cresols, so strongly germicidal *in vitro*, were found to be almost worthless in disinfecting the skin.

Ethyl alcohol, 70 per cent by weight, was found to be much more pleasant to use and less irritating to the skin than any other skin disinfectant. The following formula will give a solution approximately 70 per cent alcohol by weight: 95 per cent alcohol at 25 C., 215 cc., plus cold distilled water sufficient to make 1000 cc. The cost is only 33 cents a gallon.

Dr. Price's studies impressed me as being carefully carried out, and because of the relative inexpensiveness of ethyl alcohol, I resolved to try it.

Our method of preparing the patient is as follows: If the patient's condition permits it, he is given a tub bath on admission to the hospital. If this is not practical, a bed bath is given. The morning of the operation, the operative area is shaved and scrubbed thoroughly with warm water and soap for ten minutes. This reduces the bacterial flora from one-half to three fourths, depending upon the vigor with which the area is scrubbed. The area is now painted with 70 per cent alcohol by weight, tinted with eosin, and this is allowed to dry. We do not cover the operative site with sterile towels or other wrappings because we believe that it is psychologically harmful and bacteriologically useless. The patient is then taken to the operating room, and the operative site is again scrubbed—this time with two separate applications of 70 per cent alcohol by weight. Sterile drapes are applied and a third coating of 70 per cent alcohol is applied before making the incision. We prepare our hands in the same manner. A new brush is used after the first five minutes of scrubbing and after cleaning the nails with an orange stick. The second brush is used for another five minutes.

Results

In the last two years, with the use of 70 per cent alcohol by weight, we have had 15 wound infections out of 541 operations—a percentage of 2.77—as compared with 20 wound infections in 547 operations—a percentage of 3.64—during the two preceding years when Scott's Solution was used. This is an improvement of 0.87 per cent, or 25 per cent less wound infections. We, therefore, recommend 70 per cent alcohol by weight as an efficient, economical, practical and non-irritating skin disinfectant.

Scientific Controversies.—Even in the last century or two the history of science was marred by many a bitter controversy, between rival leaders and their followers, over theories. A theory was defended like a home citadel, and doubters were deemed enemies actuated by the blackest of motives. Among such bickerings there was by contrast the magnanimity of Charles Darwin who said, regarding the storm of criticism that raged after the publication of "The Origin of Species," "If my book can not stand the bombardment, why then let it go down and be forgotten."—Eliot Blackwelder: Science and Human Prospects, Science, 93:361 (April 18) 1941.

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AUGUST, 1941

TWO VIEWS OF THE TIMES

From the first, the Editorial Board of the NORTH CAROLINA MEDICAL JOURNAL adopted the policy of publishing editorials—with rare exceptions—unsigned. This plan is used by most of the other state journals, and presents certain advantages that need not be discussed here. For this month's issue two editorials, prepared independently, presented such divergent views that they could not possibly be reconciled. Both are printed for the consideration of our readers. Some may wish to comment on either view, or to offer their own ideas of the future prospects for civilization.

1. *The Biologic Viewpoint*

Every man who has thought at all deeply about the present state of the world must have arrived at certain profoundly shocking conclusions. Man proudly calls himself *homo sapiens* and is frequently assured that he was created in the image of God. Poets sing his virtues and history glorifies his defeats, with the inevitable result that man regards himself as a very superior being, so far above the other members of the animal kingdom that frequently he resents Darwinian allusions to his heredity.

Then, all at once, man reveals those hereditary qualities of selfishness, intolerance, fear, submissiveness and brutality which have lain dormant under the thin veneer of civilization, and the spectacle is presented of the most highly educated and powerful of all the races of Europe willingly following a murderous, treacherous, thoroughly despicable brute into forms of savagery which make the hyena and the tiger seem gentle and amiable creatures by comparison.

It is a diseased world, and a very fit subject for a clinic. What is wrong with the patient? What is the etiology of his dreadful malady, and is there a reasonable hope of cure? To answer these questions we must clear our minds of cant, and do what poets, theologians and the New Deal steadfastly refuse to do—namely, take a purely biologic view of man.

When the sperm fertilizes the ovum it deposits within the egg certain infinitesimal particles of nuclear matter, called chromosomes, which promptly unite with similar chromosomes of the ovum. A single chromosome must be magnified a thousand times to render it clearly visible, but, minute as it is, it is yet composed of smaller particles called genes, and these mighty atoms transmit to the offspring every mental, moral and physical quality which he does or ever will possess. We call this genetic inheritance, and it is the primordial tragedy of the human race, a tragedy so terrible that its contemplation shocks us into dumb amazement. For by this scurvy trick nature has made man the inevitable, preordained recipient of traits, both good and bad, which inexorably govern his life. No striving for physical or moral excellence, no hard-won mental attainment influences in the slightest those tiny genes; for the biologists tell us that acquired characters are not transmissible.

What of environment? The question is probably unanswerable; for it seems impossible to formulate any general rule. A fair statement would seem to be that environment may shape the expression of hereditary traits, but is incapable of any fundamental modification of genetic endowments. The child is inevitably the father of the man, though, for quite understandable and obvious reasons, many parents refuse to accept such a harsh dictum. However, environment alone seems the only rational hope for mankind, especially that type of environment called Education, which should be a

training in the inhibition of undesirable genetic traits. But the Germans have taught us that man can be educated for evil as easily as for good.

It must be admitted that man has struggled down the few centuries of recorded history without exhibiting in the mass any discernible genetic improvement. Can the human race improve in any basic, fundamental sense? The answer must be left to scientists who will study the question one hundred thousand, or more, years from now. Certainly the immediate outlook is gloomy.

* * *

2. "In Times of Stress"

In the *Annals of Internal Medicine* for June, Dr. Maurice Pincoffs, speaking editorially under the above caption, gives a rather optimistic view of the future prospects for civilization. He does not indulge in any wishful thinking, but recognizes that "This is a period . . . when the great winds of change are blowing." He looks upon it, however, as an outbreak of hysteria that has spread from one European nation to another. It is interesting to recall that Dr. Beverley Tucker⁽¹⁾ has said that "emotions are as contagious as measles," and that uncontrolled mass emotion culminates in the unreasoning fury of the mob leading to all kinds of violence, even war. Pincoffs believes that, "Destructive as a hysterical nation may be and great as may appear its successes, if its principles of action contradict the instinctive faiths of man it is doomed to ultimate failure."

"The physician knows not only that the essential mechanisms of man's body are unchanging except in terms of many thousands of years but also that man's essential beliefs in what he terms good and what he feels to be evil in human relations have a similar unchangeable quality. Built in to the warp and woof of the human mind and body by endless cycles of group living these beliefs are as permanent in their way as are the mechanisms of respiration.

"The actions of man and the actions of nations are readily swayed toward good or

bad ends, and mob psychology may even persuade the individuals of a mob that what they do is good, and silence for a time the deeper individual knowledge that the action is evil. But mob hysteria is a tempest of wind that stirs the surface waters now this way and now that and man's own knowledge of what is good and evil is more akin to the eternal motion of the tides and the flow of the rivers to the sea."

The final paragraph of the editorial is a stimulating challenge to the members of the medical profession: "We physicians, who know that such an outburst of national hysteria can have no more effect on the ultimate form of human society than a gale would have on the ebb and flow of the tides, must nevertheless as practical men recognize its destructive possibilities to our nation, to the people of our own generation and to their children. In this period in which all things are questioned we may from our knowledge and experience affirm the validity and the ageless character of man's perception of plain right and wrong in human affairs. We may each serve as a firm mooring post for those weak vessels that might otherwise drift with the wind.

1. Tucker, Beverley R., quoted by H. Mason Smith: *The Psychologic and Economic Influence of Alcohol, Dis. of the Nervous System*, 2:219 (July) 1941.

* * *

THE HEALTH OF THE SOUTHERN NEGRO SHARECROPPER

The condition of the Southern farm laboring class has been so often the subject of opprobrious comment by Northern observers that Southerners themselves, in spite of their own experience and daily observations, have almost come to accept the oracular, if somewhat shallow statement, of the Great White Father of the New Deal, that the South is his number one Problem Child. Madame Perkins, too, has bemoaned the sad condition of the Southern farm laborer in her most sanctimonious New England accent, and for the past eight years Northern audiences have flocked to the obscenities of "Tobacco Road" under the impression that here, at last, was a true picture of the South, stripped of the Thomas Nelson Page type of romanticism.

There now emerges from this sea of

crocodile tears a scientific study of Southern Negro sharecroppers made by a group of Harvard investigators, the results of which must have surprised them almost as much as it will shock the Northern critics of Southern farm conditions. J. W. Thompson, in *The Journal of the American Medical Association* for July 5⁽¹⁾, reports in detail the results of a clinical study of a small group of Negro sharecroppers on a Mississippi plantation, selected at random, which in his own words, "casts a certain doubt on the prevalent notion that Negro sharecroppers are apt to be in a lamentable state of ill health." When it is realized that this group of Negroes were compared with a selected group of Harvard students, who were regarded as "an ideal white standard", the above quotation must be regarded as a fine example of scientific understatement.

Thompson concludes, "that the group studied, with the exception of one house-servant, were in good general physical condition"; that, in his belief, "this group does not differ significantly from the majority of Negroes working on first rate plantations", and finally, that "the physical status, apart from gonococcal infections, of the plantation Negro is, at least in certain areas, not far below the standard of excellence in a white group." (Harvard students).

We of the South are too sternly critical of ourselves to be either surprised or lulled into complacency by this honest report by Boston scientists. We know our defects and are earnestly trying to correct them. We must admit, however, to a certain sadistic enjoyment of Thompson's conclusions; for we can easily imagine Northern "social scientists" shrieking aloud in their anguish the words of King David:

"Tell it not in Gath.

"Publish it not in the streets of Askalon,
"Lest the Philistines rejoice."

1. Thompson, J. W.: The Clinical Status of a Group of Negro Sharecroppers, *J. A. M. A.* 117:6 (July 5) 1941.

* * * *

CERTIFICATES

It would be interesting to know how much time the average physician uses every year in filling out certificates of some kind or another. Nearly all colleges and universities, and many secondary schools require prospective students to have physical examination forms filled out. For more than

two years certificates and negative serological reports have been required of applicants for marriage license. According to the law of North Carolina, all school teachers, barbers, food handlers, and various other public servants, are required to have "health certificates". Certificates for all varieties of vaccinations are required for numerous purposes. During the early summer, much of the physician's office time is used to fill out forms for camps of all descriptions.

The authors of most of these certificates apparently realize the value of a doctor's time, and credit him with knowing how to obtain a history and do a physical examination. By the use of simple forms a minimum of clerical work is required. A few, however, obviously assume that doctors are too ignorant to think of the essentials of a satisfactory report, and so insert queries about every possible ailment that the flesh is heir to, specifying the exact date of occurrence and numerous other irrelevant details. Just why it is so important to know whether Mary or Johnny had chicken-pox when five or seven years old, it is difficult to imagine; yet this information assumes equal importance in the certificate with the condition of the heart and lungs.

At least one college for women sends prospective students a form that requires more time for completion than it takes to make an examination for any life insurance company. More irritating still is the information demanded by some of the camps for girls. One small camp asks for details of the young girl's "menistraction" (sic!). A national organization, with camps for girls all over the country, calls for meticulous details as to the prospective camper's past medical history, followed by an extremely rigid examination. This examination includes a complete blood examination and—for girls 10 to 14 years old—a blood pressure reading and a "pelvic examination, if possible"! Any woman who would suggest a pelvic examination in girls of this age should herself have not a pelvic, but a psychiatric examination.

It may be that this unreasonable type of certificate must be accepted as one of the minor nuisances, most prevalent—like mosquitoes and chiggers—in warm weather; but at least we can protest at every possible opportunity to the directors of camps and to those responsible for the health of college and university students.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

Duke University School of Medicine

FREDERIC M. HANES, M. D.,
BARNES WOODHALL, M. D. and
DOUGLAS SPRUNT, M. D.

DR. HANES (reading the clinical summary): The story is that of a 12 year old colored boy who came complaining of difficulty in walking of one year's duration. Nothing in his *family or past history* sheds any light upon his present complaint.

About one year ago, he said, he was struck by a brick on the posterior aspect of the skull, which caused some throbbing pain for several hours, but did not produce unconsciousness, or any residual symptoms.

Six months ago his gait became staggering, and occasionally he would fall. About this time he developed a fine tremor of the right hand, and, shortly thereafter, of the left hand. For the past few months he had been unable to perform fine movements with his right hand.

During the past three months his walking had become worse and he fell frequently unless he held to some support. He had had an external strabismus and diplopia for the past three months, and rather continuous, severe, generalized headache, without associated nausea or vomiting.

Physical Examination: Only the positive findings will be given. Our interest centers in the neurological examination, since the general physical findings are not remarkable in any way. The skull was normal, no bruit was heard on auscultation, and the neck was not stiff. There was a definite cracked-pot sound on percussion over both temporal regions.

Cranial nerves: I. There was no abnormality of smell. II. The left eye was practically blind, but the visual field was normal to gross tests on the right. The optic discs were quite pale bilaterally, presenting the picture of optic atrophy. There was no choked disc in either eye and the retinal veins were not congested. III, IV, VI. The pupils were round, regular, and equal, and reacted to light and on accommodation. External ocular movements are said to have

been well executed, despite the history of external strabismus. V, VIII, IX, X, XI, XII. These were all normal. VII. There was a supranuclear palsy of the right seventh nerve.

Motor system: There was no weakness or atrophy noted anywhere, but all extremities were said to be moderately hypertonic.

Reflexes: These were present and active everywhere and the Babinski reflex was negative bilaterally.

Sensation was normal.

Coordination: There was a coarse tremor of both outstretched hands, more marked on the right. This tremor was more noticeable during the performance of voluntary acts. The Romberg test was positive, the patient tending to fall to the left.

Accessory findings: Stereoscopic films of the skull showed marked convolutional atrophy of the inner table, and wide separation of the suture lines. The sella turcica was pushed forward and there was erosion of the posterior clinoid processes. The initial spinal fluid pressure was 490 mm. of water; the fluid was quite normal in albumin, in cellular content, and serologically. Electro-encephalograms indicated increased intracranial pressure but failed to localize any lesion. Visual fields could not be plotted satisfactorily because of poor cooperation.

The patient was transferred to the neurosurgical service, and the posterior fossa was opened by a cerebellar approach. The cerebellum was normal, but on exploration of the fourth ventricle the operator found the distal end of the aqueduct of Sylvius blocked by what seemed to be a tumor growth. Shortly after returning to the ward the patient assumed an opisthotonic position, the temperature rose to the point where it could not be measured with the clinical thermometer and death ensued.

Discussion

DR. HANES: We are told by the surgeons that a blockage of the aqueduct by a tumor was found on exploration, and, since a lesion at this place would produce marked internal hydrocephalus and would account for the patient's symptoms and signs, we can only accept this diagnosis.

The real lesson which this case enforces is that tumors of the brain not infrequently produce *false localizing signs*. In this case, for example, the distention of the third ven-

tricle, by the very marked internal hydrocephalus, caused blindness of one eye, doubtless through pressure on the optic chiasm or the optic nerve, and bilateral pallor of both nerve heads. Furthermore, this same pressure on the bony sella caused a marked erosion of the clinoids. It is thus easy to see how one might have been led astray in the localization of this tumor by signs pointing to a tumor in the region of the pituitary gland. Such *false localizing signs* are common in tumors of the *posterior fossa*, which produce early and severe internal hydrocephalus, and may lead to an erroneous diagnosis.

DR. BARNES WOODHALL: The case which has been presented today represents a type of acquired hydrocephalus observed in children and adolescents caused by an occlusion of the aqueduct of Sylvius. These cases of diverse etiology are sometimes grouped under the title of atresia of the aqueduct of Sylvius and form roughly 3 per cent of the total number of brain tumors, or simulating conditions, recognized in this age period. A second and clinically identical case has been studied recently on the Neurosurgical Service.

From every clinical standpoint, these patients exhibit striking evidence of an increase in intracranial pressure—an increase of relatively gradual onset. The ages of these two patients and of others reported in the literature remove them from the category of patients with congenital hydrocephalus. The clinical syndrome of an elevation in intracranial pressure is always present—namely, headache, vomiting and papilledema or secondary optic atrophy. A study of plain roentgenograms of the skull shows separated suture lines, convolutional atrophy, and erosion of the sella turcica, secondary to distention of the third ventricle. Electro-encephalography will support the clinical impression of a state of increase in intracranial pressure and may localize the lesion in the posterior fossa. Technical methods of diagnosis may be completed by ventriculography, which will in all cases clearly demonstrate not only the existing hydrocephalus but also the point of occlusion.

The evidence assembled from neurologic examination is meager, inconclusive, and not characteristic of the morbid process existing in these patients. Signs of cerebellar dysfunction are commonly observed, leading in

most instances to the erroneous diagnosis of a cerebellar tumor. Marked tremor of the upper extremities and striking loss of muscle tone in the lower extremities, so advanced that both patients could not walk, were particular features of the neurologic study of these individuals. The conclusion is obvious that the clinical syndrome needs clarification. In both patients, atresia of the aqueduct of Sylvius was suspected simply because the diagnosis of a cerebellar tumor did not “ring true”.

The pathologic processes found in these patients will be discussed by Dr. Sprunt. They fall into three groups, none of which can be attacked directly by the neurosurgeon. In the first group, there is a proliferation of the subependymal glia in the region of the aqueduct resembling the changes that occur around the central canal of the spinal cord. The second group consists of minute tumors in an early stage of formation, so situated that the aqueduct becomes compressed before the tumors attain an appreciable size. The third group represents a diffuse inflammatory process involving almost the entire ventricular system, with inevitable occlusion of the aqueduct since it forms the narrowest communication of that system.

Direct neurosurgical treatment at present is futile and the mortality of cerebellar exploration is very high, even though no trauma to the nervous system is obvious. Postoperative hyperthermia always develops, possibly as a result of the grave and acute change in intracranial pressure caused by ventricular drainage and the cerebellar decompression. If the clinical diagnosis could be made, the ideal technical procedure would be some form of “short circuiting” process to establish a new channel for the flow of ventricular fluid about the point of occlusion.

Pathological Discussion

DR. DOUGLAS SPRUNT: The brain is much heavier than normal for an individual of this age. It weighs 1975 Gm. (average weight at this age 1350 Gm.). The convolutions are everywhere flattened. Between the optic chiasm and the pons there is a bluish, transparent membrane which bulges ventrad, forming the covering of a cyst-like area nearly 1 cm. in diameter. This lies just caudad to the infundibulum, and the oculomotor nerves skirt the lateral boundary. It impinges on the basilar artery.

Section through the cyst-like structure previously described reveals that this bluish, bulging area is nothing more than the third ventricle, tremendously dilated. Both lateral ventricles and the third ventricle are of enormous proportions. The contained fluid is slightly bloody, most of the blood having collected in the dependent portion of the ventricles. The septum pellucidum is considerably thickened. The anterior commissure forms a large column across the anterior border of the wide openings which now pass into the lateral ventricles. The choroid plexus shows well in the inferior horns of the ventricles, but where it passes up to the interventricular foramina it is quite atrophic. The third ventricle forms a pouch extending far posteriorly and caudally, and looking in this direction, it seems to be obstructed. Section through the caudal half of the pons discloses a fourth ventricle which is only slightly dilated. In the roof of the ventricle there is considerable hemorrhagic, soft material, but the floor appears normal. Another section at the level of the lower border of the pons shows a hemorrhagic area about 1 cm. in diameter in the region of the roof of the fourth ventricle, actually involving some of the cerebellar tissue. This is exceedingly hemorrhagic, and it is impossible at this time to say whether it is tumor or whether it is the result of operative trauma. There is certainly no wide infiltration in this region.

As pointed out by Dr. Woodhall, obstructions to the aqueduct may have one of three causes: (1) astrocytic proliferation, (2) infection with organization of an exudate in this region and (3) glioma.

At first we thought that the obstruction of the aqueduct was due to a proliferation of astrocytes. The cause of this type of proliferation is not known, but recently we performed an autopsy on an infant who died eighteen hours after birth, which may throw some light on the cause of such proliferations. Just beneath the ependyma in this child we found evidence of an old hemorrhage, as indicated by the presence of a large number of gitter cells, containing hemosiderin. These gitter cells were surrounded by astrocytes. If this child had lived the aqueduct probably would have been obliterated by the astrocytic cells, and the child would have had hydrocephalus.

Further microscopic study of this case

showed that the astrocytes in the region of the aqueduct really were *tumor* astrocytes. Nothing is yet known about the etiology of such tumors.

In conclusion, attention should be drawn to the fact that we may see an increase in the number of cases of hydrocephalus in the future. In the past, patients often died of meningitis, but since the discovery of the sulfonamide drugs many are being cured. If, however, the patient is given the drug late in the course of the disease the exudate may not all resolve and sufficient fibrosis may occur to obstruct the flow of cerebrospinal fluid at some point.

Anatomical diagnosis: Astrocytoma with stenosis of aqueduct; hydrocephalus; lobular pneumonia.

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL
WINSTON-SALEM

Presentation of Case

Mrs. B. T., a white woman 22 years of age, first entered the hospital in 1935 referred from the obstetrical clinic because of edema and hypertension.

Physical examination revealed the uterus four fingers above the umbilicus with the head at the brim of the pelvis and not engaged. The blood pressure was 140 systolic and 85 diastolic and there was slight edema of the extremities. Examination of two specimens of urine showed the specific gravity to vary between 1.014 and 1.024. The second specimen gave a 1 plus reaction for albumin, and there was no sugar in either specimen. With bed rest the patient's blood pressure became lower—120 systolic and 80 diastolic—and she was referred to the obstetrical clinic. She was readmitted to the hospital twenty days later for delivery. Her blood pressure at this time was 140 systolic and 80 diastolic. The urine was free of sugar and showed a slight trace of albumin in one specimen. The delivery was normal except for the development of a large hematoma in the left labium which ruptured during delivery and healed normally afterwards. The patient was re-admitted in 1938 for a second delivery which occurred spontaneously. A specimen of urine taken after delivery gave a 1 plus reaction for albumin

and 4 plus for blood. Her blood pressure was normal. The third admission was in January, 1940, when she was again delivered of a living, full-term infant. Her blood pressure at this time was 126 systolic and 74 diastolic. Her urine showed a trace of albumin but was otherwise normal. The patient next appeared in the obstetrical clinic on January 17, 1941. Her blood pressure was 110 systolic and 64 diastolic, and nothing abnormal was found. The patient was admitted to the hospital on February 26, 1941, with the complaint of vomiting for the previous four days. She stated that she had fallen down stairs several days ago and complained of pain in the upper abdomen and back.

Four days before admission the patient had developed a headache, followed by a backache, persistent nausea and vomiting. The pain had extended to the left lower quadrant and over the left kidney. It was learned later that the fall probably occurred during a fight with the husband, while both were under influence of an alcoholic beverage. Her immediate past history was negative except that she had had polyuria, polydipsia and polyphagia for the past three weeks. She had never had these symptoms before. She was about six months pregnant but had had no pains of a cramping nature.

Physical examination revealed an excited, acutely ill white female about 30 years of age, suffering from abdominal pain and in apparent air hunger. The respirations were deep and rapid. The pupils were equal and regular and reacted to light and accommodation. There were a few soft crepitant and mucous rales heard in the right base. The heart was not enlarged and no murmurs were present. The blood pressure was 145 systolic and 100 diastolic. There was tenderness in the epigastrium, the left hypochondrium and the left loin. The uterus was enlarged to the level of the umbilicus. The upper abdomen was tympanitic to percussion but was not distended enough to be tight. There were bruises present on both thighs and in the small of the back. The patient was given a soapsuds enema with poor results, and 1000 cc. of 5 per cent glucose was started intravenously. The urine report from the laboratory was received at this time and showed a 4 plus reaction for sugar and acetone; the patient was then given 30 units of insulin. An x-ray examination of the chest made by Dr. Rodick at this

time was reported as follows: "The only change seen is slight peribronchial thickening in the bases which suggests bronchitis." Upon return from the x-ray room the patient complained of excruciating pain over the entire back. The respirations were labored. She was given 1/6 grain of morphine. Her temperature was 98.4 F., rectally, pulse 116 and respirations 28. During the night the patient complained occasionally of pain in the back and was nauseated but did not vomit. The next morning her temperature was 98 F., her pulse 120 and her respirations 24. After her bath she was nauseated and vomited about 200 cc. of dark fluid with a fecal odor. She continued to complain of severe pain in the back. The morning urine gave a 4 plus reaction for acetone and sugar. She was given 40 units of insulin and 1000 cc. of 5 per cent glucose. The morning carbon dioxide combining power was found to be 7 vol. per 100 cc. The patient was given sodium bicarbonate, drachm 1 in 100 cc. of water, and 100 units of insulin followed by 1000 cc. of normal saline. The sodium bicarbonate was continued every hour for seven hours, and during this period she was given 200 units of insulin in divided doses and sugar was administered in tea, 2 teaspoonfuls to 200 cc. In addition to the sodium bicarbonate by mouth she was given 1500 cc. of 3 per cent sodium bicarbonate by Murphy drip. The urine at 4 p. m. showed a 3 plus reaction for sugar and 4 plus for acetone. The carbon dioxide combining power at 2 p. m. was 18 vol. per 100 cc. and the sugar was 363 mg. per 100 cc. At 7 p. m. she was given 100 units of insulin. At 9:30 p. m. the carbon dioxide combining power was 55 vol. per 100 cc., the blood sugar was 526 mg. per 100 cc. and the nonprotein nitrogen was 80.2 mg. per 100 cc. At this time her temperature was 99 F., pulse 126 and respirations 22. At 3 a. m. the patient began to have convulsions and involuntary bowel movements. Her membranes apparently ruptured and amniotic fluid escaped. Her respirations became Cheyne-Stokes in type, the temperature dropped to 97.4 F., and the pulse to 64. During the next two hours the patient became cyanotic, mucus accumulated in the throat, the pulse became thready and very weak and the respirations very labored. She died at 5 a. m.

Discussion

DR. W. L. GRIMES: In considering this case let us first take up the history and physical findings, without for the moment considering any of the laboratory findings. First, we might consider pernicious vomiting of pregnancy. I think this can be ruled out because it usually occurs in the first few weeks of pregnancy, and this woman was five and one-half or six months pregnant. Furthermore, pain, other than muscular soreness, is not present. Second, we might consider a toxemia of pregnancy. The patient did have abdominal pain with vomiting; however it seems to me that the systolic blood pressure was a little low, although the diastolic was high. This cannot be entirely ruled out, although it is a little early in pregnancy for such a condition to develop. Third, we might consider an intra-uterine injury such as separation of the placenta. There is very little likelihood of this, however, because clear fluid was expelled from the vagina and this was due no doubt to ruptured membranes. This fact also would argue against a ruptured uterus. Fourth, there is the possibility of an intra-abdominal injury such as a ruptured viscus or a ruptured blood vessel; however, little consideration is given to this because of the time elapsing since the accident happened, with little, if any, evidence of a generalized peritonitis. Fifth, because of the fall, we should consider some brain injury; however, a spinal puncture showed no blood in the fluid, and no abnormal neurological findings were present. The sixth possibility is diabetes. This has to be given serious consideration because of the history of polyuria, polydypsia and polyphagia which had developed before her injury. We know, however, that the patient did not have diabetes when she was in the hospital a year previously. The seventh consideration would be pancreatic disease, which might have been caused by the injury. There was a contusion in the lumbar region, which, associated with epigastric pain extending into the left loin, and nausea and vomiting, would lead one definitely to suspect a pancreatitis.

Now let us take up the laboratory findings. The red cell count and hemoglobin would certainly rule out any massive hemorrhage, and, therefore, any ruptured vessel in the abdomen. The white cell count and the differential count would indicate inflam-

matory reaction somewhere. The urine examination would indicate mild kidney damage and diabetes. Because of the blood chemistry we are compelled to say that this was a severe diabetes with acidosis, as indicated by the low carbon dioxide combining power of 7 vol. per 100 cc. and the blood sugar of 363 mg. per 100 cc. the morning after admission. In spite of the fact that the patient had around 340 units of insulin during the next eight or ten hours her blood sugar rose to 526 mg. per 100 cc. The carbon dioxide combining power during this time rose to 55 vol. per 100 cc., but we must remember that she had been getting large doses of bicarbonate of soda quite frequently. The rise in blood sugar in spite of the enormous dose of insulin strongly indicates very severe pancreatic damage. She put out more than 1800 cc. of urine during her thirty-nine hours in the hospital. In spite of this the nonprotein nitrogen was 80.2 mg. per 100 cc. This could indicate that there was damage to the kidney, but severe diabetes could also account for this high value.

Considering all of the facts presented here, I think this woman had a severe pancreatic disease with probably almost total destruction of the pancreas. In pancreatitis there is abdominal pain in the upper part of the abdomen and in the back, particularly on the left side, with nausea and vomiting. I believe the injury had something to do with this pancreatic destruction, which probably started as a mild hemorrhage in the pancreas and gradually progressed to a necrosis and digestion of the organ. I also think that the kidneys would show some mild recent damage.

DR. H. M. STARLING: How high a temperature are you likely to have in acute pancreatitis?

DR. W. L. GRIMES: I think that this woman was beyond having fever.

DR. T. E. FORBES: It was 102.2 F. when I saw her before she came to the hospital.

DR. W. L. GRIMES: She was in extreme shock when she came in. She no doubt had some toxemia and some kidney changes. The nonprotein nitrogen is quite frequently elevated in severe uncontrolled diabetes.

DR. C. H. MAUZY: She might have had an eclampsia.

DR. W. L. GRIMES: I believe she had toxemia from kidney damage rather than from eclampsia. She had severe convulsions.

I believe that a disturbance of the pancreas was the fundamental change.

DR. C. H. MAUZY: How do you account for the pain in the stomach?

DR. W. L. GRIMES: That was due to the damage to her pancreas.

Clinical Diagnosis

Diabetes mellitus.

Dr. Grimes's Diagnosis

Severe acute pancreatitis — origin probably traumatic.

Mild recent kidney damage.

Anatomical Diagnosis

Acute pancreatitis.

Fibrosis of islets of Langerhans.

Glycogen infiltration of liver.

Pregnancy.

DR. T. T. FROST: Autopsy showed a well developed, well nourished individual. The fetus and placenta were intact. The chief finding grossly was a moderate degree of fat necrosis involving the head of the pancreas. The body and tail grossly appeared normal. Microscopically, however, the damage was much more extensive. The pancreatic duct and its branches showed complete necrosis of the wall with no cells of any type remaining. In the pancreatic tissue there was widespread necrosis, edema, and an acute inflammatory reaction with scattered areas of fat necrosis. These lesions were found throughout the entire pancreas. In the remaining pancreatic tissue the islets showed a moderate degree of fibrosis with a decrease in number of the cells. The kidneys showed slight fibrosis of some of the glomeruli with occasional hyalin casts in the tubules. The liver showed marked vacuolization of the hepatic cells. These vacuoles were free of fat when stained with sudan III, so that they were taken to represent glycogen, although glycogen stains were not done. The lungs showed a moderate degree of hyperemia but no definite pneumonia. It is probable that this patient had had mild diabetes for some little time and that the symptoms which brought her into the hospital were due to an acute pancreatitis which we judge originated through the pancreatic duct, possibly by regurgitation of bile. Whether or not the injury to her back had anything to do with this is impossible to say; however, there was no direct anatomical evidence of trauma to the pancreas.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Raleigh

Malpractice: Hospital is not liable for the negligence of a physician unless he is an employee or agent of the hospital and acting as such within the scope of his employment.

This suit was instituted against a hospital to recover damages for an injury alleged to have been caused by negligent treatment of the plaintiff's wife. An action by the wife of the plaintiff against the defendant for the same cause was by consent consolidated for trial. The physician who treated the patient was not made a party to the action. The evidence showed that the plaintiff brought his wife to the defendant hospital as a pay patient, and that, since neither the plaintiff nor his wife had expressed preference for any particular physician, a reputable physician was assigned from the hospital staff. The evidence further tended to show that the physician was employed as a professor by the hospital in its school of medicine and that under the terms of his employment he was permitted to engage in the private practice of medicine.

Upon examination the doctor found indications suggestive of cancer, but did not feel that an extensive surgical operation was advisable, as the patient was a poor surgical risk. He did, however, advise curettement, and the use of radium as proper for controlling hemorrhage and as a preventive for cancer. After obtaining the written consent of the patient, the operation was performed and the radium treatment administered on November 2, 1935. On November 7, the patient went home. She returned for a postoperative check on November 25 and on December 1, 1935, and on these occasions there was no bleeding, but a profuse discharge. She returned to the hospital on January 5, 1936, when a diabetic condition was found. She was seen again by the physician on February 11, 1936, and the doctor visited her at her home sometime in May, 1936. The patient was again in the hospital in the fall of 1937 for further treatment for a vesicovaginal fistula which resulted from the first operation.

The plaintiff's evidence tended to show that following the initial treatment the patient suffered great pain, and that later both rectal and vaginal fistulas appeared, accompanied by impairment of the functions of the bladder and offensive discharges, and that her mind became weakened and her physical health seriously injured.

The plaintiff offered the testimony of three physicians, who had examined the patient after her treatment at the hospital, which tended to show that her condition indicated "marked radium reaction" or radium burns, and that the injuries complained of were attributable to radium reaction; and there was further evidence by the medical witness that if radium had been properly used the kind and extent of radium reaction would not have resulted.

There was evidence also that in some human beings the effects of radium are more pronounced than in others, and that there are individuals who are supersensitive or allergic to its effects. It was also brought out that a person suffering with diabetes is more susceptible to unfavorable reaction from radium treatment, and that, as it takes some six months for radium treatment to become effective, if a few months after operation a person developed diabetes, the reaction would be increased and might result in consequences deleterious to the patient which could not have been anticipated. There was other evidence, however, tending to discredit the inference that the patient had diabetes.

The lower court granted a motion for nonsuit, and entered a judgment dismissing the action,

whereupon the plaintiff appealed. The Supreme Court held as follows: "The evidence is insufficient to show that the physician in treating plaintiff's wife was acting as an agent or employee of the hospital or that the hospital held him out as such or subsequently ratified his treatment as an act of its agent or employee, and there being no evidence that the hospital failed to exercise reasonable care in selecting the physician, its motion for nonsuit was properly allowed."

The doctor himself, as above noted, had not been made a party to the suit, and inasmuch as the lower court was affirmed on the basis that the attending physician was acting in his individual capacity as a practicing physician, it was unnecessary to determine whether the evidence was sufficient to show actionable negligence on his part. In rendering this decision the court referred to a Virginia case, that of *Stewart Circle Hospital Corp. v. Curry*, which shows quite clearly the status of a physician acting as an individual instead of as an agent of the hospital. The reference to this case is as follows: "It is conceded that a hospital is not responsible for the acts of an attending physician, whether a member of its staff or an outsider, except where by contract it has assumed responsibility. This is based on the fact that such physician is an independent contractor and alone is responsible for the exercise of professional skill and judgment, subject to no control by the hospital in the execution thereof." N. C. Supreme Court Report, Book 219, p. 628.

BULLETIN BOARD

PRESIDENT'S MESSAGE

Since the onset of the European war very little has been written about socialized medicine and similar panaceas. However, from time to time, ominous rumblings are heard from Washington which would indicate that the storm has not passed but will sooner or later break out with increased intensity. This temporary lull should afford us an excellent opportunity to put our house in order.

Several years ago the Hospital Saving Association was founded by the North Carolina State Medical Society. Under the capable management of Dr. Manning it has had an unusual growth and has served an excellent purpose. For a while, due to unforeseen difficulties, it ran in the red, but it has since moved well over into the black and is now in a sound position to increase its sphere of usefulness. This organization writes hospital insurance to provide beds in the wards only. It insures only groups and not individuals alone.

The Hospital Care Association includes both ward patients and those who prefer rooms, especially among that large group of the so-called white collar class. This organization has had a steady growth, and while it was also in the red for a while, it is now well in the black and is working on a sound

basis. While its membership is considerably smaller than that of the Hospital Saving Association, it is doing excellent work and is partly filling a great need.

When an individual who should carry insurance for a ward bed fails to do so and becomes ill, he goes into a hospital and receives practically the same accommodations he would have received if insured. The only difference is that some public charity or the hospital itself bears the burden. However, when an individual, obviously out of place in a ward, becomes ill and has no hospital room insurance or means of paying for a room, he is forced into a ward to which it is hard to adjust himself and which definitely hinders recovery. For that reason there is at present a greater need for expansion of insurance covering room service than for ward coverage. The man who makes \$4,000.00 a year but who has a family to support and educate needs a policy giving him room coverage as much or even more than the man making \$1200.00 a year needs ward protection. So much for hospital insurance.

There are numerous commercial companies which sell hospital insurance with either ward or room coverage, combined with moderate cash benefits for most surgical operations, and, in some cases, to a limited amount for medical treatment. About three years ago it became obvious that such competition would have to be met by the Hospital Saving and Hospital Care Associations if they were to survive.

A group of physicians and laymen in Durham who were vitally interested in the Hospital Care Association formed the Medical Service Association. The object of this organization is to write insurance for the low income group so that in case of illness a member will have some cash benefits with which to pay toward the cost of surgical treatment, and, to a slight degree, medical services. This organization received the approval of the State Medical Society at its recent meeting.

Since this organization was so closely identified with the Hospital Care Association, the trustees of the Hospital Saving Association felt that it was necessary to add surgical coverage to supplement their hospital policy.

We have now two organizations in the state, both doing excellent work but strongly competitive. Unfortunately the salesmen of both organizations too often feel that it is

necessary to emphasize the faults and weaknesses of their competitor in order to sell their own policies, and this is not a healthy state of affairs. The time appears to be ripe for a union of the Hospital Saving and Hospital Care Associations.

A strong board of trustees could be formed by selection from the present Boards and by drafting the best men in the State Medical Society and in the State Hospital Association. This newly formed organization (possibly called Hospital Saving and Care Association) could then devote its entire efforts to the hospital insurance and leave to the Medical Service Association (which has been endorsed by our State Society) the handling of surgical and medical insurance.

By a close cooperation between this new organization and the Medical Service Association, and with a 100 per cent backing of the State Medical Society and the State Hospital Association, we shall have made a long step forward. By prompt action and with two or three years in which to make minor adjustments we should be in a position to give sound insurance to our people, protection to our hospitals, and reasonable cash payments to the doctors toward surgical and medical services to the lower income group. Then and then only will we be reasonably safe from the threats of outside commercial companies, who care nothing about the welfare of our people, our hospitals, or the doctors, but are interested only in the amount of dividends paid to their stockholders.

In discussing the possibility of merger with representatives of the two companies, I was impressed by the fact that they emphasized the obstacles to be overcome rather than the benefits to be gained. Of course there are obstacles, and many of them, but what in life is worth accomplishing that is free of obstacles? It is also true that the identities of the two companies would be lost. But if a greater, stronger and better organization results, then such minor sacrifices will have been well worth while. The Chairman of the Committee on Socialized Medicine is Dr. Hamilton McKay of Charlotte, one of the most efficient and energetic men in our Society. I urge that you give him and his committee your advice and whole-hearted cooperation in this most important undertaking.

F. WEBB GRIFFITH, M.D.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. William deB. MacNider, Kenan Professor of Pharmacology, has been invited to lecture at the University of Michigan School of Medicine on July 29, 30 and 31 on the general subject of Tissue Susceptibility and Resistance. The three lectures will deal with:

1. The Repair of Tissue and Tissue Resistance
2. The Aging Process and Tissue Resistance
3. The Adjustability of the Life Process to Injurious Agents.

* * *

Dr. A. T. Miller, Instructor in Physiology, is teaching in the Department of Physiology at the University of Michigan School of Medicine for the summer session.

* * *

Dr. and Mrs. B. F. Kingsbury from Cornell University have recently visited the School of Medicine. Dr. Kingsbury is Professor of Histology at Cornell.

* * *

Dr. W. R. Berryhill talked to the Alamance-Caswell Medical Society at its July meeting on "Endemic Typhus Fever and Spotted Fever in North Carolina".

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Nutrition's role in national defense and in building better bodies for post-war duties was discussed at a three-hour conference of the North Carolina Committee on Nutrition, held recently in the auditorium of the State Laboratory of Hygiene. The conference was called by Dr. Carl V. Reynolds, chairman of the committee, which was organized two years ago and is made up of representatives of various State departments and agencies having to do with public health, public welfare, education and agriculture.

The purpose of the recent conference was to integrate the activities of all forces and influences interested in bringing about better nutritional standards. After hearing the viewpoints advanced by various speakers, the conference embodied its immediate objectives in the following resolution, which was unanimously passed:

"That the county health officer, superintendent of education, welfare officer and the Chairman of the Agricultural Workers' Council in each county be asked to convene a meeting of all persons and agencies interested in nutrition in its broad aspects for the purpose of organizing a nutritional committee of each County Defense Council; that the Agricultural Workers' Council will be expected to continue its present program and cooperate with the nutrition committee in all phases of the broad program; that the county nutrition committee will act as a clearinghouse for the nutrition program and may find it advisable to organize other groups for urban and other particular activities."

Stating the purposes of the conference, Dr. Reynolds pointed out that human expectation now has reached 62 years and that with proper attention given to nutrition there is reason to believe that it will be expanded to "three score years and ten." He declared we should depend more on "the sustaining qualities of the right kind of food." He went on to say that "for two years the North Carolina Committee on Nutrition has been studying from within how to combat the detrimental foes from without, that is, how to learn the difference between 'hollow hunger and hidden hunger,' with a view to eliminating the latter through the right use of the right kind of food."

The number of deaths from preventable accidents in North Carolina continues to gain momentum as the year advances, official figures compiled by the State Board of Health show. Through June there had been 854 such deaths reported to the Bureau of Vital Statistics, as compared with 665 the first half of 1940, representing an increase of 189 for 1941, so far. These do not include suicides and homicides. During June 35 people in North Carolina took their lives, which was 15 in excess of the number in the corresponding month last year. There was an increase of one in the number of homicides, the June, 1941, total having been 33, as compared with 32 for the corresponding month last year.

* * *

June's 7,493 births brought the total number for the first half of 1941 in North Carolina to 41,937, an increase of 2,115 over the corresponding period of 1940, while the 2,635 deaths brought the total for the first half of this year to 17,059, which was 27 fewer than died from January through June, last year.

There was a decided drop in cancer deaths in June, the total for the month having been 169, as compared with 206 for June, 1941, while pneumonia deaths fell from 122 in June, last year, to 99 in June, this year, sustaining the downward trend. An uptrend, however, was reflected in the 69 deaths from diarrhea and enteritis among children under two years of age, compared with 50 reported in June, last year.

With 419 deaths among babies under a year old, the rate jumped from 50.7 in June, last year, to 55.9 in June this year. Measles took 21 lives, against one in June, 1940, while there were 22 fatal cases of whooping cough, an increase of 11 over last June.

One death from rabies and one from tetanus occurred in North Carolina last month, while appendicitis deaths went from 19 to 29. Maternal deaths, however, showed a decrease of 9, bringing the June rate down to 5.3, as compared with 6.7 last year.

There were three typhoid fever and three malaria victims during the month, while tuberculosis deaths showed an increase. No deaths resulted from endemic typhus fever, undulant fever, smallpox or scarlet fever.

THE THERMAL BELT MEDICAL SOCIETY

The Thermal Belt Medical Society met at the Spartanburg (Smith) Baby Hospital, Saluda, on Thursday, July 17, at 6 p. m. Dinner was served at 7 p. m., and the following program was presented after dinner:

Caesarean Section, illustrated with movies—Dr.

Paul McBee, Marion.

Experiences with Drafter Examinations—Dr. William Elliott, Forest City.

Clinical Cases—Dr. D. L. Smith and Staff, Saluda.

BUNCOMBE COUNTY MEDICAL SOCIETY

The first July meeting of the Buncombe County Medical Society was a dinner meeting, held in the Pine Room of the S & W Cafeteria on July 7. Dr. Howard H. Bradshaw, Professor of Surgery at the Bowman Gray School of Medicine of Wake Forest College, spoke on "Cancer of the Larynx". The discussion was opened by Dr. Julian Moore. On July 21 the Society met at the City Hall, and Dr. Walter Johnson spoke on the subject, "Is Diverticulitis a Surgical Disease?"

REJECTIONS AT THE INDUCTION STATION

The following report shows the leading causes for rejection for the month of June 1941:

June 1941			
	White	Colored	Total
Number Examined	1,707	386	2,093
Number Rejected . .	166 (9.7%)	60 (15.5%)	226 (10.8%)
1. Deficient Vision . . .	26	6	32
2. Venereal Disease . .	11	18	29
G. C. . . .	(10)	(15)	(25)
Chancroid . .	(0)	(3)	(3)
Lues . . .	(1)	(0)	(1)
3. Pes Planus	16	12	28
4. Otitis Media	20	1	21
5. Hernia, Inguinal . .	5	5	10
6. Insufficient Teeth . . .	9	0	9
7. Overweight & Pes Planus	7	0	7
8. Pulmonary Infiltration	3	2	5
9. Organic Heart Disease . .	4	1	5
10. Ankylosis, Partial R. Ankle . . .	4	1	5
Totals .	105	46	151

It is noted that deficient vision, venereal disease, pes planus and otitis media, in the order named, are the leading causes for rejection. Venereal disease is still the leading cause for rejection among the colored registrants but has definitely improved over the preceding months. The percentage of rejections (10.8%) is a minimum to date and we may all feel very well pleased with this figure.

The rejection rate is approaching an optimum and with a little more attention paid to the leading causes for rejection, it is felt that we will soon reach the point where the rejections constitute only borderline cases. All examining physicians are to be congratulated on the progressive lowering of the rejection rate.

For the State Director:

ELMUS D. PEASLEY
Major, Medical Corps
Medical Officer.

NEWS NOTES

Dr. Richard Query of Charlotte has been certified by the American Board of Internal Medicine.

* * *

Dr. R. B. McKnight of Charlotte has been certified by the American Board of Surgery.

* * *

The following changes in address have been made in the mailing list of the North Carolina Medical Journal:

Dr. George R. Benton, Jr., from Goldsboro to Station Hospital, Camp Livingston, La.

Dr. Parker C. Hardin, from Monroe to Stark General Hospital, Charleston, South Carolina.

Dr. R. W. Prichard, from Kinston to Pink Hill.

TRANSACTIONS
OF THE
MEDICAL SOCIETY
OF THE
STATE OF NORTH CAROLINA



EIGHTY-EIGHTH ANNUAL SESSION

...held at...

PINEHURST, NORTH CAROLINA

MAY 19, 20, 21, 1941

President, Hubert B. Haywood, M. D., Raleigh

Secretary-Treasurer { T. W. M. Long, M. D., Roanoke Rapids
Isaac H. Manning, M. D., Chapel Hill

EARLY HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM ORGANIZATION TO 1804

Date	Place	President	Vice Presidents	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 17, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton James Webb Jas. John Pasteur Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchell Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1941

*Missing Data Not to be Found in Record

Date	Place of Meeting	Number in Attendance	President	Vice Presidents*	Secretary	Treasurer*	Members on Roll*	Honorary Members*	Honorary Fellows*
1849	Raleigh	25	F. J. Hill		W. H. McKee		25		
1 1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. E. Wilhamson, W. G. Thomas	W. H. McKee	W. G. Hill	38	9	
2 1851	Raleigh	23	E. Strudwick	C. E. Johnson	W. H. McKee	W. G. Hill	46	0	
3 1852	Wilmington	38	J. E. Wilhamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman	E. B. Haywood	J. J. W. Tucker	72	12	
4 1853	Fayetteville	24	J. E. Wilhamson	Wilham G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman	W. W. Harris	Daniel Dupree	80	14	
5 1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean	S. S. Satchwell	Daniel Dupree	84	17	
6 1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owea Hadley, A. D. McLean, Hugh Kelly	S. S. Satchwell	J. B. Dunn	96	18	
7 1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson	S. S. Satchwell	J. B. Dunn	101	22	
8 1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson	W. G. Thomas	J. B. Dunn	113	16	
9 1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce	W. G. Thomas	J. B. Dunn	172	18	
10 1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard	W. G. Thomas	C. W. Graham			
11 1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach	W. G. Thomas	C. W. Graham	233	18	
12 1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom	W. G. Thomas	C. W. Graham	244	18	
13 1866	Raleigh	20	J. J. Summerell	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones	W. G. Thomas	C. W. Graham			
14 1867	Tarboro	41	W. G. Thomas		S. S. Satchwell	C. W. Graham	288	11	
15 1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker	Thomas F. Wood	J. W. Jones			
16 1869	Salisbury	36	F. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke	Thomas F. Wood	J. W. Jones			
17 1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Luckey, W. R. Sharpe, R. L. Payne	Thomas F. Wood	J. W. Jones			
18 1871	Raleigh	35	Hugh Kelley	D. N. Patterson, R. C. Pearson, J. B. Seavy, G. L. Kirby	Thomas F. Wood	J. W. Jones			
19 1872	New Bern	34	W. G. Hill	H. W. Faison, R. J. Hicks, G. H. Macon, W. A. B. Norcom	James McKee	J. W. Jones			
20 1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, P. T. Jerman	James McKee	H. T. Bahnsen			
21 1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight	James McKee	H. T. Bahnsen			
22 1875	Wilson	60	J. W. Jones	Walker Debnam, J. A. Gibson, William Little, D. N. Patterson	James McKee	H. T. Bahnsen	148	5	
23 1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall	James McKee	H. T. Bahnsen	157	4	
24 1877	Salem	42	George A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill	James McKee	A. G. Carr	177	4	
25 1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Stith	L. J. Picot	A. G. Carr	194	6	
26 1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill	L. J. Picot	A. G. Carr	198	6	
27 1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis	L. J. Picot	A. G. Carr	225	6	
28 1881	Asheville	92	R. B. Haywood	J. E. McKee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy	L. J. Picot	A. G. Carr	254	6	
29 1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald	L. J. Picot	A. G. Carr	297	7	
30 1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead	L. J. Picot	A. G. Carr	310	7	
31 1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long	L. J. Picot	A. G. Carr	348	7	
32 1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr	W. C. Murphy	R. L. Payne, Jr.	424	6	

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1941—Continued

*Missing Data Not to be Found in Record

Date	Place of Meeting	Number in Attendance	President	Vice Presidents	Secretary	Treasurer	Members on Roll	Honorary Members	Honorary Fellows*
33 1886	New Bern.....	113	Joseph Graham.....	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.....	J. M. Baker.....	R. L. Payne, Jr.....	438	7	-----
34 1887	Charlotte.....	112	H. T. Bahnson.....	G. G. Smith, J. L. Nicholson, C. M. Van Poole, H. B. Ferguson.....	J. M. Baker.....	R. L. Payne, Jr.....	452	7	-----
35 1888	Fayetteville.....	133	T. D. Haigh.....	W. T. Ennett, J. A. Dunn, T. E. Anderson.....	J. M. Baker.....	C. M. Van Poole.....	306	6	-----
36 1889	Elizabeth City.....	50	W. T. Ennett.....	W. J. Jones, S. W. Stevenson, G. W. Long.....	J. M. Baker.....	C. M. Van Poole.....	410	6	-----
37 1890	Oxford.....	160	G. G. Thomas.....	R. L. Payne, Jr., Richard Dillard, S. D. Booth.....	J. M. Hays.....	C. M. Van Poole.....	414	6	-----
38 1891	Asheville.....	135	R. H. Lewis.....	S. W. Battle, J. L. Nicholson, W. H. Lilly.....	J. M. Hays.....	C. M. Van Poole.....	422	6	-----
39 1892	Wilmington.....	162	W. T. Cheatham.....	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.....	J. M. Hays.....	C. M. Van Poole.....	431	6	-----
40 1893	Raleigh.....	221	J. W. McNeill.....	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.....	R. D. Jewett.....	M. P. Perry.....	447	5	3
41 1894	Greensboro.....	166	W. H. H. Cobb.....	J. A. Hodges, R. W. Tate, Willis Alston, M. H. Fletcher.....	R. D. Jewett.....	M. P. Perry.....	454	5	3
42 1895	Goldsboro.....	-----	J. H. Tucker.....	J. Howell Way, W. H. Harrell, O. McMillan, C. A. Misenheimer.....	R. D. Jewett.....	M. P. Perry.....	436	7	3
43 1896	Winston-Salem.....	158	R. L. Payne.....	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.....	R. D. Jewett.....	M. P. Perry.....	452	7	3
44 1897	Morehead City.....	103	P. L. Murphy.....	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.....	R. D. Jewett.....	M. P. Perry.....	406	6	3
45 1898	Charlotte.....	*	Francis Duffy.....	E. C. Register, A. T. Cotton, J. H. B. Knight, F. H. Russell.....	R. D. Jewett.....	M. P. Perry.....	437	6	21
46 1899	Asheville.....	152	L. J. Picot.....	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson.....	Geo. W. Presley.....	G. T. Sikes.....	489	6	16
47 1900	Tarboro.....	115	George W. Long.....	C. M. Van Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.....	Geo. W. Presley.....	G. T. Sikes.....	482	6	21
48 1901	Durham.....	186	Julian M. Baker.....	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell.....	Geo. W. Presley.....	G. T. Sikes.....	515	5	18
49 1902	Wilmington.....	147	Robert S. Young.....	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.....	Geo. W. Presley.....	G. T. Sikes.....	546	5	20
50 1903	Hot Springs.....	155	A. W. Knox.....	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson.....	J. Howell Way.....	G. T. Sikes.....	530	6	19
51 1904	Raleigh.....	326	H. B. Weaver.....	John Hey Williams, John C. Rodman, S. F. Pfah.....	J. Howell Way.....	G. T. Sikes.....	1,033	8	17
52 1905	Greensboro.....	361	David T. Tayloe.....	C. A. Julian, John T. Burrus, I. W. Faison.....	J. Howell Way.....	G. T. Sikes.....	1,175	8	17
53 1906	Charlotte.....	406	E. C. Register.....	L. B. McBrayer, W. H. Cobb, Jr., W. O. Spencer.....	J. Howell Way.....	G. T. Sikes.....	1,234	8	16
54 1907	Morehead City.....	217	Samuel D. Booth.....	C. M. Strong, J. E. McLaughlin, W. F. Hargrove.....	David A. Stanton.....	H. McK. Tucker.....	888	7	16
55 1908	Winston-Salem.....	372	J. Howell Way.....	J. E. Stokes, J. A. Turner, W. H. Dixon.....	David A. Stanton.....	H. McK. Tucker.....	998	7	28
56 1909	Asheville.....	337	J. F. Highsmith.....	C. M. Van Poole, D. A. Garrison, D. O. Dees.....	David A. Stanton.....	H. McK. Tucker.....	1,067	7	25
57 1910	Wrightsville Beach.....	276	J. A. Burroughs, E. J. Wood.....	E. J. Wood, John Q. Myers, L. D. Wharton.....	David A. Stanton.....	H. D. Walker.....	1,080	8	35
58 1911	Charlotte.....	412	C. M. Van Poole.....	J. V. McGougan, W. E. Warren, L. N. Glenn.....	David A. Stanton.....	H. D. Walker.....	880	8	45
59 1912	Hendersonville.....	296	A. A. Kent.....	J. P. Monroe, W. P. Horton, J. G. Murphy.....	David A. Stanton.....	H. D. Walker.....	950	8	44
60 1913	Morehead City.....	232	J. P. Munroe.....	F. R. Harris, E. S. Bullock, L. B. Morse.....	John A. Ferrell.....	H. D. Walker.....	1,133	8	40
61 1914	Raleigh.....	431	J. M. Parrott.....	E. T. Dickinson, J. T. J. Battle, D. E. Sevier.....	John A. Ferrell.....	H. D. Walker.....	1,228	8	47
62 1915	Greensboro.....	443	L. B. McBrayer.....	J. J. Phillips, C. W. Moseley, S. M. Crowell.....	John A. Ferrell.....	H. D. Walker.....	1,221	9	68
63 1916	Durham.....	406	M. H. Fletcher.....	J. L. Nicholson, L. N. Glenn, W. H. Hardison.....	Benj. K. Hays.....	W. M. Jones.....	1,228	10	79
64 1917	Asheville.....	280	Charles O'H. Laughinghouse.....	D. J. Hill, J. L. Spruill, J. H. Shoford.....	Benj. K. Hays.....	W. M. Jones.....	1,271	11	81
65 1918	Pinehurst.....	291	I. W. Faison.....	Wm. deB. MacNider, Jos. B. Greene, Ben P. Royal.....	Benj. K. Hays.....	W. M. Jones.....	1,087	11	81
66 1919	Pinehurst.....	335	Cyrus Thompson.....	J. W. Halford, T. W. Davis, A. McN. Blair.....	Sec.-Treas. Benj. K. Hays.....	Acting Sec.-Treas. L. B. McBrayer.....	1,306	11	100
67 1920	Charlotte.....	479	C. V. Reynolds.....	H. D. Walker, F. Stanley Whitaker, Thos. I. Fox.....	Benj. K. Hays.....	L. B. McBrayer.....	1,497	12	100
68 1921	Pinehurst.....	404	T. E. Anderson.....	C. S. Lawrence, W. H. Ward, J. M. Manning.....	Benj. K. Hays.....	L. B. McBrayer.....	1,491	12	93
69 1922	Winston-Salem.....	507	H. A. Royster.....	W. T. Parrott, B. C. Nalle, J. R. McCracken.....	-----	-----	-----	-----	-----
70 1923	Asheville.....	356	J. W. Long.....	F. M. Hanes, T. C. Johnson, B. L. Long.....	-----	-----	1,571	12	100
71 1924	Raleigh.....	525	J. V. McGougan.....	J. L. Spruill, Eugene B. Glenn, D. A. Garrison.....	-----	-----	1,592	9	101
72 1925	Pinehurst.....	550	Albert Anderson.....	W. L. Dunn, A. E. Bell, K. G. Averitt.....	-----	-----	1,604	9	106
73 1926	Wrightsville Beach.....	445	Wm. deB. MacNider.....	J. P. Matheson, W. W. Dawson, H. H. Bass.....	-----	-----	1,657	10	116
74 1927	Durham.....	653	John Q. Myers.....	J. W. Carroll, A. Y. Linville, C. H. Cooke.....	-----	-----	1,663	10	107
75 1928	Pinehurst.....	611	John T. Burrus.....	G. H. Macon, R. F. Leinbach, W. R. Griffin.....	-----	-----	1,691	10	121
76 1929	Greensboro.....	671	Thurman D. Kitchin.....	W. L. Dunn, Asheville, D. T. Tayloe, Jr., Washington, W. D. James, Hamlet.....	-----	-----	1,735	11	143
77 1930	Pinehurst.....	701	L. A. Crowell.....	W. B. Murphy, Wm. E. Warren, N. B. Adams.....	-----	-----	1,666	11	146
							1,711	11	155

HISTORY OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1941—Continued

Date	Place of Meeting	Number in Attendance	President	President-Elect	Vice Presidents	Sec.-Treas.	Members on Roll	Honorary Members	Honorary Fellows
78 1931	Durham.....	714	J. G. Murphy.....	M. L. Stevens.....	C. A. Julian, Greensboro J. W. Davis, Statesville.....	L. B. McBrayer.....	1,600	10	164
79 1932	Winston-Salem.....	740	M. L. Stevens.....	Jno. B. Wright.....	C. W. Banner, Greensboro W. W. Sawyer, Elizabeth City.....	L. B. McBrayer.....	1,559	10	166
80 1933	Raleigh.....	714	Jno. B. Wright.....	I. H. Manning.....	J. R. McCracken, Waynesville.....	L. B. McBrayer.....	1,363	10	181
81 1934	Pinehurst.....	728	I. H. Manning.....	P. P. McCain.....	W. G. Suiter, Weldon R. L. Felts, Durham.....	L. B. McBrayer.....	1,563	10	210
82 1935	Pinehurst.....	706	P. P. McCain.....	Paul H. Ringer.....	H. D. Walker, Elizabeth City J. F. McKay, Buie's Creek William Allan, Charlotte.....	L. B. McBrayer.....	1,619	10	215
83 1936	Asheville.....	583	Paul H. Ringer.....	C. F. Strosnider.....	J. K. Pepper, Winston-Salem E. S. Bulluck, Wilmington.....	L. B. McBrayer.....	1,462	10	235
84 1937	Winston-Salem.....	767	C. F. Strosnider.....	Wingate M. Johnson.....	C. A. Woodward, Wilson Jno. F. Brownberger, Fletcher.....	L. B. McBrayer.....	1,503	7	253
85 1938	Pinehurst.....	802	Wingate M. Johnson.....	J. Buren Sidbury.....	J. F. Abel, Waynesville C. B. Williams, Elizabeth City.....	T. W. M. Long.....	1,715	7	284
86 1939	Cruise to Bermuda	319	J. Buren Sidbury.....	William Allan.....	M. D. Hill, Raleigh F. Webb Griffith, Asheville.....	T. W. M. Long.....	1,605	8	313
87 1940	Pinehurst.....	835	William Allan.....	Hubert B. Haywood.....	Frank C. Smith, Charlotte D. W. Holt, Greensboro.....	T. W. M. Long (1) I. H. Manning.....	1,661	7	311
88 1941	Pinehurst.....	755	Hubert B. Haywood.....	F. Webb Griffith.....	T. C. Kerns, Durham.....		1,700	6	309

†Died during his term of office; succeeded by E. J. Wood, first vice president.

‡Died during term of office.

(1) Died during term of office; succeeded by I. H. Manning.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1927-1941

COUNTY	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
Alamance-Caswell a	30	30	32	33	33	32	29	32	30	31	30	27	34	35	35
Alexander b															
Alleghany n															
Anson	6	8	8	6	6	4	4	9	7	8	7	6	11	10	10
Ashe p	8	6	5	5	5	4			7						
Avery r	6	6	6	5	5	5		5	5	5	5	6	4	5	5
Beaufort	17	17	16	18	15	15	12	13	15	10	9	11	12	13	13
Bertie	8	8	6	7	9	7	8	9	11	9	8	8	7	7	7
Bladen	8	8	8	8	8	5	6	6	6	6		7	7	7	7
Brunswick	1	4	6	2	2	2	2	2	3	2					
Buncombe	118	120	118	113	112	105	83	107	115	106	98	103	111	108	90
Burke	11	12	12	17	17	17	17	12	10	13	18	17	18	22	22
Cabarrus	22	27	27	23	20	20	10	14	21	8	11	11	12	15	16
Caldwell	15	15	13	15	14	12	9	12	12	12	13	15	18	17	17
Camden c															
Carteret	12	11	11	12	12	12	12	12	11	12	10	2	3	2	4
Caswell d															
Catawba	21	16	17	13	13	16	8	16	16	16	14	19	19	15	13
Chatham	9	8	9	9	4	3	2	3	2	0	1	3	6	4	6
Cherokee	8	10	10	10	9	8	5	8	8	8	7	12	11	11	10
Chowan-Perquimans	10	9	7	8	6	7	6	7	5	4	2	5	5	3	5
Clay e															
Cleveland	20	20	22	23	19	22	21	20	21	22	21	25	23	27	28
Columbus	15	14	14	15	10	8	8	10	11	10	7	9	16	18	15
Craven	17	15	14	13	13	14	9	5	10	6	6	8	7	7	11
Cumberland	29	28	22	26	23	21	27	27	27	21	24	24	22	22	13
Currituck s	3	2	1	1	1	1									
Dare f															
Davidson	19	18	17	16	17	17	17	20	23	19	24	18	17	29	31
Davie w	5	5	5	5	5	6	4	2	1	1	1	4			
Duplin	13	9	11	9	11	7	2	2	9	2	2	4	2	4	10
Durham-Orange	64	63	65	67	76	77	76	76	85	87	81	104	110	119	127
Edgecombe-Nasb	12	12	7	10	43	39	25	46	49	32	35	31	39	48	40
Forsyth	66	74	59	70	66	69	70	73	77	77	73	83	82	93	92
Franklin	10	12	11	10	9	7	7	9	8	9	9	6	3	3	3
Gaston	38	39	39	36	33	37	12	28	30	21	28	38	35	35	41
Gates	1	2	2	2	2	2	2	2	2	2	2	1	2	1	1
Graham															
Granville	12	14	13	13	13	12	10	10	11	10	11	13	13	14	14
Greene	5	5	5	5	5	5	5	6	5	6	6	7	6	5	6
Guilford	119	123	130	124	124	118	91	102	99	83	109	101	108	110	115
Halifax	14	17	17	16	15	14	13	15	18	17	25	23	23	24	21
Harnett	16	16	15	14	13	15	16	14	15	10	16	12	12	16	18
Haywood	13	8	14	14	12	13	15	20	19	21	22	21	21	21	19
Henderson j	19	16	16	19	14	12	9	17	17	13	14	17	13	10	7
Henderson-Polk g															
Hertford	7	7	6	5	5	5	6	7	7	4	5	7	3	1	6
Hoke	11	12	14	14	14	12	11	13	14	13	11	10	7	10	10
Hyde	1	1	1	1	1	1		1	1						
Iredell-Alexander	34	37	39	38	38	39	29	38	38	39	30	31	25	27	24
Jackson	6	5	6	6	3	7	2	4	7	4	6	3	3	1	1
Johnston	24	23	18	23	25	20	19	19	21	12	9	27	25	24	18
Jones	3	3	3	3	3	3	3	3	3	3	2	1			
Lee	13	14	16	13	11	13	10	10	10	3	8	10	9	10	11
Lenoir	22	23	20	22	17	19	20	22	20	22	21	22	21	25	24
Lincoln	12	13	14	13	10	12	12	13	11	8	10	11	11	11	14
Macon-Clay	8	9	6	8	4	3	2	5	3	5	4	2	4	1	4
Madison	5	12	7	5	3	4	5	4	4	1		1	1		
Martin t	10	10	10	8	7	4									
Martin-Washington-Tyrrell															
McDowell	8	7	9	12	10	10	10	10	12	10	12	13	13	11	15

STATUS OF MEMBERSHIP BY COUNTIES—Continued

COUNTY	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941
Mecklenburg	104	119	125	128	124	117	104	108	116	116	125	119	119	130	138
Mitchell							8	3	2	3	3	2	3	3	4
Mitchell-Avery															
Mitchell-Watauga	7	9	8	6	5	5									
Montgomery	9	10	11	9	10	9	7	9	9	8	7	3	6	4	5
Moore	17	20	22	17	21	21	18	22	21	19	22	21	20	19	17
Nash <i>n</i>	31	30	30	33											
New Hanover	41	38	32	38	37	35	25	35	39	34	36	32	39	37	38
Northampton	9	9	6	3	4	5	4	8	4	4	4	9	1	3	7
Onslow	5	6	5	5	5	6	6	6	5	2	5	4	4	3	5
Orange <i>h</i>															
Pamlico	5	5	5	4	4	4	4	4	4	4	4	4	4	4	3
Pasquotank-Camden-Currituck-Dare							12	14	12	11	9		9	11	10
Pasquotank-Camden-Dare <i>s</i>	18	16	14	17	14	11									
Pender	1	1	1	1	1	1	1	1	1		1	1			
Perquimans <i>i</i>															
Person	7	7	6	6	6	6	7	7	8	7	7	8	8	9	8
Pitt	26	31	24	27	27	20	14	22	26	24	26	30	29	28	25
Polk <i>j</i>	6	6	6	6	5	7	7	6	6	4	5	5	5	6	6
Radolph	10	11	10	8	7	14	10	11	13	10	9	11	11	13	12
Richmond	18	18	14	17	17	15	16	15	16	15	17	16	15	16	16
Robeson	28	28	21	24	21	22	23	25	27	28	29	34	33	35	35
Rockingham	24	21	20	24	24	21	22	23	21	18	20	18	22	22	26
Rowan	40	42	35	35	39	33	24	34	30	27	28	26	24	27	34
Rutherford	24	22	22	22	21	21	19	20	21	23	22	23	23	24	22
Sampson	13	13	10	13	13	14	14	14	14	14	16	16	16	18	18
Scotland	12	12	12	10	11	11	11	11	11	10	11	11	10	10	10
Stanly	15	14	14	16	15	13	12	16	17	18	19	18	20	16	17
Stokes	7	8	6	2	6	6	1	1	1						
Surry <i>r</i>	20	22	20	20	13	17	12								
Surry-Yadkin								25	22	17	15	14	12	18	16
Swain								3		4	5	3	3		2
Transylvania	5	7	4	2	2	1	3	2	2	2		2	3	1	7
Tyrrell <i>k</i>															
Union	16	16	14	13	10	9	10	10	11	10	8	11	13	13	14
Vance	11	11	11	12	8	7	8	9	9	8	8	6	10	10	10
Wake	78	80	84	94	87	86	87	89	88	89	95	100	95	94	93
Warren	6	6	6	6	6	6	5	5	6	2	2	2	2	3	2
Washington-Tyrrell <i>u</i>	6	6	5	3	3	3									
Watauga <i>l q</i>							3	5	6	5	5	6	6	4	5
Watauga-Ashe															
Wayne	32	38	38	38	30	32	22	27	29	27	29	30	31	34	33
Wilkes <i>o</i>	14	11	10	10	11	10									
Wilkes-Alleghany							9	13	10	14	13	14	15	13	16
Wilson	34	35	31	28	28	22	21	25	29	31	25	25	24	25	27
Yadkin <i>r</i>	2	3	5	10	4	4	1								
Yancey	7	5	3	4	1	1		5	4	1		4			
Totals	1,691	1,738	1,669	1,694	1,600	1,559	1,363	1,563	1,619	1,462	1,503	1,715	1,605	1,661	1,604

a The figures for 1926 and after are for Alamance-Caswell; for the other years, for Alamance only; *b* See Iredell-Alexander; *c* See Pasquotank-Camden-Dare; *d* For 1926 and after, see Alamance-Caswell; *e* See Macon-Clay; *f* See Pasquotank-Camden-Dare; *g* See Henderson or Polk for years after 1925; *h* See Durham-Orange; *i* See Chowan-Perquimans; *j* See Henderson-Polk for 1912-1925; *k* See Washington-Tyrrell; *l* See Mitchell-Watauga; *m* See Edgecombe-Nash for 1931; for the other years Edgecombe only; *n* See Wilkes-Alleghany; *o* See Wilkes-Alleghany; *p* See Watauga-Ashe; *q* See Watauga-Ashe; *r* See Mitchell-Avery; *s* See Pasquotank-Camden-Currituck-Dare; *t* See Martin-Washington-Tyrrell; *u* See Martin-Washington-Tyrrell; *v* See Surry-Yadkin; *w* See Rowan.

ROSTER OF MEMBERS NORTH CAROLINA

STATE BOARD OF HEALTH FROM

ORGANIZATION IN 1877 TO 1941

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Charles J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M.D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledoux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald, M.D.	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885

<i>Name</i>	<i>Address</i>	<i>Appointed by</i>	<i>Term</i>
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1884 to 1886
R. H. Lewis, M.D.	Raleigh	State Board of Health	1884 to 1886
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1888
H. T. Bahnson, M.D., President	Winston	State Society	1887 to 1888
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1889
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1888 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1888 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1889 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1892
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1893
J. M. Baker, M.D.	Tarboro	State Society	1891 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1892
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1892 to 1897
Thomas F. Wood, M.D., Secretary*	Wilmington	State Society	1891 to 1895
George G. Thomas, M.D., President	Wilmington	State Board of Health	1892 to 1895
S. Westray Battle, M.D.	Asheville	State Society	1893 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1893 to 1895
John Whitehead, M.D.	Salisbury	State Board of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1894 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1897 to 1899
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1897 to 1899
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1897 to 1899
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901
H. H. Dodson, M.D.	Milton	State Society	1901 to 1907
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Jackson	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1907 to 1913
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1909
David T. Taylor, M.D.	Washington	State Society	1907 to 1913
James A. Burroughs, M.D. ¹	Asheville	State Society	1909 to 1913
J. E. Ashcraft, M.D.	Monroe	State Board of Health	1909 to 1913

* Died in 1892, leaving a five-year unexpired term, which was filled by the Board.

¹ Died leaving unexpired term.

<i>Name</i>	<i>Address</i>	<i>Appointed by</i>	<i>Term</i>
J. L. Ludlow, Civil Engineer.....	Winston-Salem.....	Gov. W. W. Kitchin.....	1911 to 1917
J. Howell Way, M.D., President.....	Waynesville.....	Gov. W. W. Kitchin.....	1911 to 1917
W. O. Spencer, M.D.....	Winston-Salem.....	Gov. W. W. Kitchin.....	1911 to 1917
Thomas E. Anderson, M.D.....	Statesville.....	State Society.....	1911 to 1917
Charles O'H. Laughinhouse, M.D.....	Greenville.....	State Society.....	1913 to 1919
R. H. Lewis, M.D.....	Raleigh.....	Gov. Locke Craig.....	1913 to 1919
Edw. J. Wood, M.D.....	Wilmington.....	Gov. Locke Craig.....	1913 to 1915
A. A. Kent, M.D. ²	Lenoir.....	State Society.....	1913 to 1919
Cyrus Thompson, M.D.....	Jacksonville.....	State Society.....	1913 to 1919
Fletcher R. Harris, M.D.....	Henderson.....	State Board of Health.....	1915 to 1921
J. L. Ludlow, Civil Engineer.....	Winston-Salem.....	Gov. Locke Craig.....	1917 to 1923
J. Howell Way, M.D., President.....	Waynesville.....	Gov. T. W. Bickett.....	1917 to 1923
E. C. Register, M.D. ³	Charlotte.....	Gov. T. W. Bickett.....	1917 to 1923
Thomas E. Anderson, M.D.....	Statesville.....	State Society.....	1917 to 1923
Charles O'H. Laughinghouse, M.D.....	Greenville.....	State Society.....	1919 to 1923
Fletcher R. Harris, M.D. ³	Henderson.....	State Society.....	1919 to 1923
A. J. Crowell, M.D.....	Charlotte.....	Gov. T. W. Bickett.....	1921 to 1923
Chas. E. Waddell, C.E. ⁴	Asheville.....	Gov. C. Morrison.....	1919 to 1925
Cyrus Thompson, M.D.....	Jacksonville.....	State Society.....	1919 to 1925
R. H. Lewis, M.D.....	Raleigh.....	Gov. T. W. Bickett.....	1923 to 1925
E. J. Tucker, D.D.S.....	Roxboro.....	Gov. T. W. Bickett.....	1923 to 1929
J. Howell Way, M.D., President.....	Waynesville.....	Gov. C. Morrison.....	1923 to 1929
A. J. Crowell, M.D.....	Charlotte.....	Gov. C. Morrison.....	1923 to 1927
James P. Stowe, Ph.G.....	Charlotte.....	Gov. C. Morrison.....	1923 to 1925
D. A. Stanton, M.D.....	High Point.....	State Board of Health.....	1923 to 1929
Thomas E. Anderson, M.D.....	Statesville.....	State Society.....	1923 to 1926
Charles O'H. Laughinghouse, M.D. ⁵	Greenville.....	State Society.....	1925 to 1931
Cyrus Thompson, M.D. ¹	Jacksonville.....	State Society.....	1925 to 1931
D. A. Stanton, M.D.....	High Point.....	State Society.....	1925 to 1931
R. H. Lewis, M.D. ¹	Raleigh.....	Gov. A. W. McLean.....	1926 to 1931
Jno. B. Wright, M.D. ⁶	Raleigh.....	Gov. A. W. McLean.....	1925 to 1931
E. J. Tucker, D.D.S. ⁶	Roxboro.....	Gov. A. W. McLean.....	1926 to 1927
W. S. Rankin, M.D. ⁴	Charlotte.....	State Board of Health.....	1927 to 1929
L. E. McDaniel, M.D.....	Jackson.....	State Board of Health.....	1927 to 1929
Chas C. Orr, M.D.....	Asheville.....	Gov. A. W. McLean.....	1929 to 1935
Thomas E. Anderson, M.D. ⁶	Statesville.....	State Society.....	1929 to 1935
L. E. McDaniel, M.D. ⁶	Jackson.....	State Society.....	1927 to 1933
James P. Stowe, Ph.G. ⁶	Charlotte.....	Gov. A. W. McLean.....	1929 to 1935
A. J. Crowell, M.D. ⁶	Charlotte.....	Gov. O. Max Gardner.....	1930 to 1931
J. M. Parrott, M.D. ⁶	Kinston.....	State Board of Health.....	1929 to 1935
Chas. C. Orr, M.D. ⁶	Asheville.....	Gov. O. Max Gardner.....	1931 to 1935
J. M. Parrott, M.D. ⁵	Kinston.....	State Society.....	1931 to 1935
C. V. Reynolds, M.D.....	Asheville.....	State Society.....	1931 to 1933
L. B. Evans, M.D.....	Windsor.....	State Society.....	1931 to 1933
S. D. Craig, M.D.....	Winston-Salem.....	State Society.....	1931 to 1933
John T. Burrus, M.D.....	High Point.....	Gov. O. Max Gardner.....	1931 to 1933
J. N. Johnson, D.D.S.....	Goldsboro.....	Gov. O. Max Gardner.....	1931 to 1933
J. A. Goode, Ph.G.....	Asheville.....	Gov. O. Max Gardner.....	1931 to 1933
H. L. Large, M.D.....	Rocky Mount.....	Gov. O. Max Gardner.....	1931 to 1935
H. G. Baity, C.E.....	Chapel Hill.....	Gov. O. Max Gardner.....	1931 to 1935
Grady G. Dixon, M.D. ⁷	Ayden.....	Ex. Com. State Society.....	1931 to 1932
Grady G. Dixon, M.D. ⁷	Ayden.....	State Society.....	1932 to 1935
S. D. Craig, M.D.....	Winston-Salem.....	State Society.....	1933 to 1937
W. T. Rainey, M.D.....	Fayetteville.....	State Society.....	1933 to 1937
J. N. Johnson, D.D.S.....	Goldsboro.....	Gov. J. C. B. Ehringhaus.....	1933 to 1937
Hubert B. Haywood, M.D.....	Raleigh.....	Gov. J. C. B. Ehringhaus.....	1933 to 1937
James P. Stowe, Ph.G.....	Charlotte.....	Gov. J. C. B. Ehringhaus.....	1933 to 1937
Grady G. Dixon, M.D.....	Ayden.....	State Society.....	1935 to 1939
J. LaBruce Ward, M.D.....	Asheville.....	State Society.....	1935 to 1939
H. Lee Large, M.D.....	Rocky Mount.....	Gov. J. C. B. Ehringhaus.....	1935 to 1939
H. G. Baity, C.E.....	Chapel Hill.....	Gov. J. C. B. Ehringhaus.....	1935 to 1939
J. N. Johnson, D.D.S.....	Goldsboro.....	Gov. Clyde R. Hoey.....	1937 to 1941
Hubert B. Haywood, M.D.....	Raleigh.....	Gov. Clyde R. Hoey.....	1937 to 1941
James P. Stowe, Ph.G.....	Charlotte.....	Gov. Clyde R. Hoey.....	1937 to 1941
S. D. Craig, M.D.....	Winston-Salem.....	State Society.....	1937 to 1941
W. T. Rainey, M.D.....	Fayetteville.....	State Society.....	1937 to 1941
Grady G. Dixon, M.D.....	Ayden.....	State Society.....	1939 to 1943
J. LaBruce Ward, M.D.....	Asheville.....	State Society.....	1939 to 1943
H. Lee Large, M.D.....	Rocky Mount.....	Gov. Clyde R. Hoey.....	1939 to 1943
H. G. Baity, Sc.D.....	Chapel Hill.....	Gov. Clyde R. Hoey.....	1939 to 1943
C. C. Fordham, Jr., Ph.G. ⁸	Greensboro.....	Gov. Clyde R. Hoey.....	1940 to 1943

2 Resigned to become member of General Assembly.

3 Resigned to become Health Officer Vance County.

4 Resigned.

5 Resigned to become Secretary of State Board of Health.

6 Term terminated on account of the reorganization of the

State Board of Health by General Assembly.

7 To fill vacancy caused by resignation of Dr. J. M. Parrott.

8 To fill vacancy caused by the death of James P. Stowe, Ph.G.

ROSTER OF MEMBERS OF THE VARIOUS BOARDS OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

FIRST BOARD

James H. Dickson, Wilmington.....	1859-1866
Charles E. Johnson, Raleigh.....	1859-1866
Caleb Winslow, Hertford.....	1859-1866
Otis F. Manson, Townsville.....	1859-1866
William H. McKee, Raleigh.....	1859-1866
Christopher Happpoldt, Morganton.....	1859-1866
J. Graham Tull, New Bern.....	1859-1866
Samuel T. Iredell, Secretary.....	1859-1866

SECOND BOARD

N. J. Pittman, Tarboro.....	1866-1872
E. Burke Haywood, Raleigh.....	1866-1872
R. H. Winborne, Edenton.....	1866-1872
S. S. Satchwell, Rocky Point.....	1866-1872
J. J. Summerell, Salisbury.....	1866-1872
R. B. Haywood, Raleigh.....	1866-1872
M. Whitehead, Salisbury.....	1866-1872
J. F. Shaffner, Salem.....	1866-1872
William Little, Secretary.....	1866-1872
Thomas F. Wood, Secretary, Wilmington.....	1867-1872

THIRD BOARD

Charles J. O'Hagan, Greenville.....	1872-1878
W. A. B. Norcom, Edenton.....	1872-1878
C. Tate Murphy, Clinton.....	1872-1878
George A. Foote, Warrenton.....	1872-1878
J. W. Jones, Tarboro.....	1872-1878
R. L. Payne, Lexington.....	1872-1878
Charles Duffy, Jr., Secretary, New Bern.....	1872-1878

FOURTH BOARD

Peter E. Hines, Raleigh.....	1878-1884
Thomas D. Haigh, Fayetteville.....	1878-1884
George L. Kirby, Goldsboro.....	1878-1884
Thomas F. Wood, Wilmington.....	1878-1884
Joseph Graham, Charlotte.....	1878-1884
Robert I. Hicks, Williamston ¹	1878-1880
Richard H. Lewis, Raleigh ²	1880-1884
Henry T. Bahnson, Secretary, Salem.....	1878-1884

FIFTH BOARD

William R. Wood, Scotland Neck.....	1884-1890
Augustus W. Knox, Raleigh.....	1884-1890
Francis Duffy, New Bern.....	1884-1890
Patrick L. Murphy, Morganton.....	1884-1890
Willis Alston, Littleton.....	1884-1890
J. A. Reagan, Weaverville.....	1884-1890
W. J. H. Bellamy, Secretary, Wilmington.....	1884-1890

SIXTH AND SEVENTH BOARDS³

R. L. Payne, Jr., Lexington.....	1890-1892
George W. Purefoy, Asheville.....	1890-1892
George G. Thomas, Wilmington.....	1890-1894
Robert S. Young, Concord.....	1890-1894

William H. Whitehead, Rocky Mount.....	1890-1896
George W. Long, Graham.....	1890-1896
L. J. Picot, Secretary, Littleton.....	1890-1896
Julian M. Baker, Tarboro.....	1892-1898
H. B. Weaver, Secretary, Asheville.....	1892-1898
J. M. Hays, Greensboro ⁴	1894-1897
Kemp P. Battle, Jr., Raleigh ⁵	1897-1900
Thomas S. Burbank, Wilmington ¹	1894-1898
Richard H. Whitehead, Chapel Hill ⁶	1896-1898
William H. H. Cobb, Goldsboro ⁶	1898-1900
J. Howell Way, Secretary, Waynesville ⁷	1898-1902
David T. Tayloe, Washington.....	1896-1902
Thomas E. Anderson, Sec., Statesville.....	1896-1902
Albert Anderson, Wilson ⁸	1898-1902
Edward C. Register, Charlotte ⁸	1898-1902
Thomas S. McMullan, Hertford ⁸	1900-1902
John C. Walton ⁸	1900-1902

EIGHTH BOARD

A. A. Kent, Lenoir.....	1902-1908
Charles O'H. Laughinghouse, Greenville.....	1902-1908
M. H. Fletcher, Asheville.....	1902-1908
James M. Parrott, Kinston.....	1902-1908
J. T. J. Battle, Greensboro.....	1902-1908
Frank H. Russell, Wilmington.....	1902-1908
George W. Pressly, Secretary, Charlotte ¹	1902-1906
G. T. Sikes, Secretary, Grissom ⁹	1906-1908

NINTH BOARD

Lewis B. McBrayer, Asheville.....	1908-1914
John C. Rodman, Washington.....	1908-1914
William W. McKenzie, Salisbury.....	1908-1914
Henry H. Dodson, Greensboro.....	1908-1914
John Bynum, Winston-Salem.....	1908-1914
J. L. Nicholson, Richlands.....	1908-1914
Benj. K. Hays, Secretary, Oxford.....	1908-1914

TENTH BOARD

Isaac M. Taylor, Morganton.....	1914-1920
John Q. Myers, Charlotte.....	1914-1920
Jacob F. Highsmith, Fayetteville.....	1914-1920
Martin L. Stevens, Asheville.....	1914-1920
Charles T. Harper, Wilmington ⁴	1914-1915
Edwin G. Moore, Elm City ¹⁰	1915-1920
John G. Blount, Washington ¹¹	1914-1920
Hubert A. Royster, Secretary, Raleigh.....	1914-1920

ELEVENTH BOARD

Lester A. Crowell, Lincolnton.....	1920-1926
William P. Holt, Duke.....	1920-1926
J. Gerald Murphy, Wilmington.....	1920-1926
Lucius N. Glenn, Gastonia.....	1920-1926
Clarence A. Shore, Raleigh.....	1920-1926
William M. Jones, Greensboro.....	1920-1926
Kemp P. B. Bonner, Sec., Morehead City.....	1920-1926

TWELFTH BOARD

Paul H. Ringer, Asheville.....	1926-1932
W. Houston Moore, Wilmington.....	1926-1932
T. W. M. Long, Roanoke Rapids.....	1926-1932
W. W. Dawson, Grifton ⁴	1926-1932
J. K. Pepper, Winston-Salem.....	1926-1932
Foy Roberson, Durham.....	1926-1932
John W. McConnell, Secretary, Davidson.....	1926-1932
David T. Tayloe, Jr., Washington ¹²	1930-1932

¹ Resigned before expiration of term.

² Elected for unexpired term of Dr. Hicks.

³ In 1890 the Medical Society of the State of North Carolina adopted the plan of electing members of the Board in such a manner that the terms would expire at different intervals of two years. This practice was followed for twelve years, or until 1902, when the plan was abandoned; an equivalent of two terms of six years each. It is evident that the Society arranged to abandon the policy as early as 1898, as two members were elected for short terms, and two years later two other members were elected for still shorter terms. It is therefore impossible to separate the sixth and seventh Boards, since the membership was overlapping.

⁴ Died before the expiration of his term.

⁵ Elected to serve unexpired term of Dr. Hays.

⁶ Elected to serve the unexpired term of Dr. Burbank.

⁷ Elected to serve the unexpired term of Dr. Whitehead.

⁸ Elected for short term expiring in 1902.

⁹ Elected to serve the unexpired term of Dr. Pressly.

¹⁰ Elected to serve the unexpired term of Dr. Harper.

¹¹ Died a few months before the expiration of his term; such a short time that the vacancy was not filled.

¹² Elected to serve unexpired term of Dr. W. W. Dawson.

THIRTEENTH BOARD

Ben F. Royal, Morehead City.....	1932-1938
Benj. J. Lawrence, Secretary, Raleigh.....	1932-1938
F. Webb Griffith, Asheville.....	1932-1938
Hamilton W. McKay, Charlotte.....	1932-1938
J. W. Vernon, Morganton.....	1932-1938
W. H. Smith, Goldsboro.....	1932-1938
K. G. Averitt, Cedar Creek ¹	1932-1938
Roscoe D. McMillan, Red Springs ¹³	1936-1938

FOURTEENTH BOARD

Karl B. Pace, Greenville.....	1938-1944
William M. Coppridge, Durham.....	1938-1944
Frank A. Sharpe, Greensboro.....	1938-1944
Lewis W. Elias, Asheville.....	1938-1944
J. Street Brewer, Roseboro.....	1938-1944
W. D. James, Hamlet.....	1938-1944
L. A. Crowell, Jr., Lincolnton.....	1938-1944

¹³ Elected to serve unexpired term of Dr. Averitt.

MOORE COUNTY MEDICAL SOCIETY MEDAL

In 1927 the Moore County Medical Society kindly put up enough money, the interest from which would pay for a medal to be given for the best paper read before the meeting each year. No one is eligible to receive this medal except Fellows of the Medical Society of the State of North Carolina in good standing; no invited guest is allowed to compete.

Each Section Chairman selects a committee of three to pass on the best paper written in their section. These six papers are then turned over to the State Committee who pass on the best of the six papers, the winner in this instance to receive the medal. The following Fellows have been awarded this medal:

- 1928—Paul Pressly McCain, M.D.....Sanatorium
"The Diagnosis and Significance of Juvenile Tuberculosis"
(From Section on Pediatrics)
- 1929—A. B. Holmes, M.D.....Fairmont
"The Treatment of Uremia"
(From Section on Chemistry, Materia Medica and Therapeutics)
- 1930—C. T. Smith, M.D., and W. Bernard Kinlaw, M.D.....Rocky Mount
"The Clinical Consideration of Anaemia of Pregnancy and of Puerperium"
(From Section on Practice of Medicine)
- 1931—F. C. Smith, M.D.....Charlotte
"Practical Value of Perimetry in Intracranial Conditions; Case Reports" (tumors, vascular disease, toxemia, syphilis and trauma)
(From Section on Eye, Ear, Nose and Throat)
- 1932—Charles I. Allen, M.D.....Wadesboro
"An Improved Splint for Treating Fractures of the Lower Extremity Showing Reduction and Skeletal Distraction Attachments"
(From Section on Surgery)
- 1933—H. F. Sloan, M.D.....Charlotte
"Some General Remarks about Cataract Surgery, With Report of 100 Consecutive Uncomplicated Cataract Operations"
(From Section on Ophthalmology and Otolaryngology)
- J. R. Adams, M.D.....Charlotte
"Hypo-glycaemia in Children"
(From Section on Pediatrics)

- 1934—Fred E. Motley, M.D.....Charlotte
"Complications of Mastoiditis with Special Reference to Septicemia"
(From Section on Ophthalmology and Otolaryngology)
- 1935—Arthur H. London, M.D.....Durham
"The Composition of an Average Pediatrics Practice"
(From Section on Pediatrics)
- 1936—V. K. Hart, M.D.....Charlotte
"Etiological and Therapeutic Aspects of Bronchiectasis with Clinical Observations on Bronchial Lavage by the Stitt Method"
(From Section on Ophthalmology and Otolaryngology)
- 1937—No award made.
- 1938—O. Hunter Jones, M.D.....Charlotte
"Pelvic Architecture and Classification with its Practical Application"
(From Section on Gynecology and Obstetrics)
- 1939—Donnell B. Cobb, M.D.....Goldsboro
"Vaginal Ureterolithotomy"
(From Section on Surgery)
- 1940—C. R. Monroe, M.D., C. D. Thomas, M.D., and C. L. Gray, M.D.....Pinehurst
"Thoracoplasty and Apicolysis"
(From Section on Surgery)

OFFICERS

OFFICERS 1940-1941

- President—Hubert B. Haywood, M.D.....Raleigh
President-Elect—F. Webb Griffith, M.D.....Asheville
First V. Pres.—D. W. Holt, M.D.....Greensboro
Second V. Pres.—T. C. Kerns, M.D.....Durham
Sec.-Treas.—T. W. M. Long, M.D.*.....Roanoke Rapids
I. H. Manning, M.D.....Chapel Hill

OFFICERS 1941-1942

- President—F. Webb Griffith, M.D.....Asheville
President-Elect—D. B. Cobb, M.D.....Goldsboro
First V. Pres.—T. DeL. Sparrow, M.D.....Charlotte
Second V. Pres.—T. L. Carter, M.D.....Gatesville
Sec.-Treas.—Roscoe D. McMillan, M.D.....Red Springs

COUNCILORS 1940-1943

- First District—H. D. Walker, M.D.....Elizabeth City
Second District—Thomas Leslie Lee, M.D.....Kinston
Third District—W. Houston Moore, M.D., Wilmington
Fourth District—G. W. Mitchell, M.D.....Wilson
Fifth District—J. G. Pate, M.D.....Gibson
Sixth District—Geo. L. Carrington, M.D., Burlington
Seventh District—Roht. H. Crawford, M. D., Rutherfordton
Eighth District—Jas. H. McNeill, M.D., N. Wilkesboro
Ninth District—I. E. Shafer, M.D.....Salisbury
Tenth District—Harold S. Clark, M.D.....Asheville

SECTION CHAIRMEN 1941-1942

- Public Health and Education—P. Y. Greene, M.D., Burlington
Surgery—Hubert A. Royster, M.D.....Raleigh
Ophthalmology and Otolaryngology—O. B. Bonner, M.D., High Point
Gynecology and Obstetrics—E. W. Franklin, M.D., Charlotte
Pediatrics—E. K. McLean, M.D.....Charlotte
Practice of Medicine—O. Norris Smith, M. D., Greensboro
General Practice of Medicine and Surgery—R. E. Smith, M.D., Mount Airy

* Died during term of office.

DELEGATES TO AMERICAN MEDICAL ASSOCIATION

Wingate M. Johnson, M.D. (1940-1941), Winston-Salem	
W. T. Rainey, M.D. (1940-1942).....	Fayetteville
Ross S. McElwee, M.D. (1941-1942).....	Statesville
C. C. Carpenter, M.D., Alternate.....	Winston-Salem
I. H. Manning, M.D., Alternate.....	Chapel Hill
C. W. Armstrong, M.D., Alternate.....	Salisbury

DELEGATES TO MEDICAL SOCIETY OF VIRGINIA, 1941 MEETING

D. W. Holt, M.D.....	Greensboro
Robert E. Smith, M.D.....	Mount Airy
John C. Tayloe, M.D.....	Washington
W. G. Suiter, M.D.....	Weldon

DELEGATES TO SOUTH CAROLINA MEDICAL ASSOCIATION, 1942 MEETING

Yates Faison, M.D.....	Charlotte
W. D. James, M.D.....	Hamlet
E. S. Bulluck, M.D.....	Wilmington

COMMITTEES

Advisory to Industrial Commission

M. A. Pittman, M.D., Chairman.....	Wilson
N. P. Battle, M.D.....	Rocky Mount
Foy Roberson, M.D.....	Durham

Advisory Committee on Maternity and Infancy for the Children's Bureau

Aldert S. Root, M.D., Chairman.....	Raleigh
J. Buren Sidbury, M.D.....	Wilmington
Bayard Carter, M.D.....	Durham

Advisory to Woman's Auxiliary

Caroline McNairy, M.D., Chairman.....	Lenoir
C. F. Strosnider, M.D.....	Goldsboro
C. A. Peterson, M.D.....	Spruce Pine
Ben J. Lawrence, M.D.....	Raleigh

Cancer

H. B. Ivey, M.D., Chairman.....	Goldsboro
C. C. Carpenter, M.D.....	Winston-Salem
Thomas Leslie Lee, M.D.....	Kinston

Commercializing Drugs

James M. Northington, M.D., Chairman.....	Charlotte
Julian A. Moore, M.D.....	Asheville
J. B. Johnson, M.D.....	Old Fort

Finance

Vance P. Peery, M.D., Chairman.....	Kinston
G. Westbrook Murphy, M.D.....	Asheville
W. M. Coppridge, M.D.....	Durham

Hospitals

J. B. Whittington, M.D., Chairman.....	Winston-Salem
R. L. Norburn, M.D.....	Asheville
Fred Hubbard, M.D.....	N. Wilkesboro

Industrial Health

E. A. Thompson, M.D., Chairman.....	Winston-Salem
H. F. Eason, M.D.....	Sanatorium
I. T. Mann, M.D.....	High Point
D. W. Holt, M.D.....	Greensboro

Legislation

Hubert B. Haywood, M.D., Chairman.....	Raleigh
Geo. L. Carrington, M.D.....	Burlington
B. C. Willis, M.D.....	Rocky Mount

Medical Society Foundation

L. C. Skinner, M.D. (1939-1943).....	Greenville
R. L. Pittman, M.D. (1939-1942).....	Fayetteville
Ross S. McElwee, M.D. (1940-1944).....	Statesville
John Q. Myers, M.D. (1941-1945).....	Charlotte

Mental Hygiene

James W. Vernon, M.D., Chairman.....	Morganton
E. A. MacMillan, M.D.....	Winston-Salem
James Watson, M.D.....	Raleigh

Moore County Medical Society Medal

Hubert A. Royster, M.D., Chairman.....	Raleigh
A. McN. Blue, M.D.....	Carthage
Chas. Hartwell Cocke, M.D.....	Asheville

Obituaries

J. B. Cranmer, M.D., Chairman.....	Wilmington
J. A. McCracken, M.D.....	Waynesville
J. W. Harbison, M.D.....	Shelby

Postgraduate Medical Study

W. H. Smith, M.D., Chairman.....	Goldsboro
R. F. Leimbach, M.D.....	Charlotte
W. Reece Berryhill, M.D.....	Chapel Hill
W. C. Davison, M.D.....	Durham
C. C. Carpenter, M.D.....	Winston-Salem
G. M. Cooper, M.D.....	Raleigh

Printing

Roscoe D. McMillan, M.D., Chairman.....	Red Springs
Wingate M. Johnson, M.D.....	Winston-Salem
W. G. Suiter, M.D.....	Weldon

Public Relations

Ben F. Royal, M.D., Chairman.....	Morehead City
P. P. McCain, M.D.....	Sanatorium
H. D. Walker, M.D.....	Elizabeth City

Social Security

Forrest M. Houser, M.D., Chairman.....	Cherryville
Paul H. Ringer, M.D.....	Asheville
W. C. Bostic, M.D.....	Forest City
T. G. Upchurch, M.D.....	Smithfield
Ben J. Lawrence, M.D.....	Raleigh
Paul F. Whitaker, M.D.....	Kinston
M. P. Whichard, M.D.....	Murphy
K. B. Pace, M.D.....	Greenville
Geo. L. Carrington, M.D.....	Burlington
Thomas L. Carter, M.D.....	Gatesville
Roscoe D. McMillan, M.D.....	Red Springs

Serialized Medicine

Hamilton W. McKay, M.D., Chairman.....	Charlotte
B. O. Edwards, M.D.....	Asheville
Robt. H. Crawford, M.D.....	Rutherfordton

Syphilis Control

J. C. Knox, M.D., Chairman.....	Raleigh
Hamilton W. McKay, M.D.....	Charlotte
J. Roy Hege, M.D.....	Winston-Salem

Tuberculosis

S. M. Bittinger, M.D., Chairman.....	Black Mountain
P. A. Yoder, M.D.....	Winston-Salem
Chas. C. Orr, M.D.....	Asheville

Committee on Scientific Work

Roscoe D. McMillan, M.D., Chairman.....	Red Springs
I. H. Manning, M.D.....	Chapel Hill
William Allan, M.D.....	Charlotte

Medical Preparedness

Hubert B. Haywood, M.D.....	Raleigh
Carl V. Reynolds, M.D.....	Raleigh

Board of Medical Examiners for Nurses

President—Miss Josephine Kerr, R.N. Charlotte
 Secretary-Treasurer and Education Director—
 Miss Bessie M. Chapman, R.N. Raleigh
 Moir S. Martin, M.D. (From Hospital
 Association) Mount Airy
 Roscoe D. McMillan, M.D.* (From Medical
 Society, 1940-1943) Red Springs

* Resigned June, 1941. Successor to be elected by Board.

*Board of Medical Examiners of the State of
North Carolina, 1938-1944*

Karl B. Pace, M.D. Greenville
 W. M. Coppridge, M.D. Durham
 Frank A. Sharpe, M.D. Greensboro
 Lewis W. Elias, M.D. Asheville
 J. Street Brewer, M.D. Roseboro
 W. D. James, M.D. Hamlet
 L. A. Crowell, Jr., M.D. Lincolnton

Arrangements

Roscoe D. McMillan, M.D., Chairman Red Springs
 Place of Meeting Charlotte
 Date of Meeting—To be determined by the Execu-
 tive Committee.

SESSIONS OF THE HOUSE OF DELEGATES

MONDAY AFTERNOON SESSION

May 19, 1941

The House of Delegates of the Medical Society of the State of North Carolina convened for its Eighty-Eighth Annual Session in the ladies' card room, Hotel Carolina, Pinehurst, at 2 p. m., with the President, Dr. Hubert Benbury Haywood, presiding.

President Haywood: The House of Delegates will please come to order, and we will have the roll call of the delegates and alternates.

... Secretary-Treasurer Manning called the roll, and the following delegates were present:

<i>County</i>	<i>Delegates</i>
Alamance-Caswell.....	S. C. Spoon
Anson.....	
Avery.....	
Beaufort.....	D. E. Ford
Bertie.....	
Bladen.....	
Brunswick.....	
Buncombe.....	B. O. Edwards, C. C. Orr
Burke.....	James W. Vernon
Cabarrus.....	
Caldwell.....	C. R. Hedrick
Carteret.....	K. P. B. Bonner
Catawba.....	
Chatham.....	
Cherokee.....	
Chowan-Perquimans.....	
Cleveland.....	H. C. Thompson
Columbus.....	
Craven.....	
Cumberland.....	J. A. Shaw
Davidson.....	J. R. Terry
Davie.....	
Duplin.....	
Durham-Orange.....	W. C. Davison,
	C. E. Gardner, A. H. London, Jr., H. M. Brinkley,
	W. B. McCutcheon.
Edgecombe-Nash.....	Newsom P. Battle
Forsyth.....	
Franklin.....	
Gaston.....	McT. G. Anders
Gates.....	T. L. Carter
Graham.....	
Greene.....	
Granville.....	
Guilford.....	Fred M. Patterson,
	D. W. Holt, Walter F. Cole, Philip B. Davis, R.
	B. Davis.
Halifax.....	
Harnett.....	
Haywood.....	J. R. McCracken

<i>County</i>	<i>Delegates</i>
Henderson.....	
Hertford.....	T. J. Faison
Hoke.....	C. D. Thomas
Hyde.....	
Iredell-Alexander.....	R. S. McElwee
Jackson.....	
Johnston.....	
Jones.....	
Lee.....	
Lenoir.....	Rachel Davis
Lincoln.....	
McDowell.....	D. M. McIntosh
Macon-Clay.....	
Madison.....	
Martin-Washington-Tyrrell.....	
Mecklenburg.....	T. D. Sparrow,
	J. A. Elliott, Paul W. Sanger, A. D. Taylor, W.
	B. Mayer, T. W. Baker.
Mitchell.....	
Montgomery.....	
Moore.....	W. E. Overcash
New Hanover.....	
Northampton.....	
Onslow.....	
Pamlico.....	
Pasquotank-Camden-Currituck-Dare.....	H. D. Walker
Pender.....	
Person.....	
Pitt.....	J. L. Winstead
Polk.....	Marion C. Palmer
Randolph.....	J. H. Soady
Richmond.....	W. D. James
Robeson.....	Roscoe D. McMillan, L. R. Hedgpeth
Rockingham.....	
Rowan.....	J. W. Frazier, I. E. Shafer
Rutherford.....	Herbert Hudgins
Sampson.....	
Scotland.....	Albert W. James
Stanly.....	L. R. Gaskin
Surry-Yadkin.....	Moir S. Martin
Swain.....	
Transylvania.....	
Union.....	
Vance.....	H. A. Newell
Wake.....	B. J. Lawrence,
	M. D. Hill, G. S. Coleman, V. M. Hicks.
Warren.....	
Watauga-Ashe.....	
Wayne.....	H. B. Ivey
Wilkes-Alleghany.....	
Wilson.....	W. C. Hunter
Yancey.....	

Secretary-Treasurer Manning: Mr. President, there are fifty-six members present.

President Haywood: We will consider that a quorum. I now declare the House of Delegates open for business.

President's Message to the House of Delegates

Many momentous things of world-wide, nation-wide, and state-wide importance have occurred during these past twelve months which have claimed our time and have captured our imagination and have profoundly influenced our thought and action. The world has been at war, and we have been precipitated into a preparedness campaign to meet an enemy who may soon be at our door. Our Society, as a component part of the American Medical Association, has been aware of its responsibilities and has participated in all activities to which it was obligated. Dr. Webb Griffith, our President-Elect, has ably headed your Preparedness Committee.

A fateful hour was struck for American medicine when it was tried by a so-called jury of its peers (one was a colored woman and another was a woman WPA worker) and on April 3, 1941, was found guilty of violating the antitrust laws of the country and of being a trade union acting in restraint of legitimate trade. This issue must and will be met.

Our State Legislature has met and adjourned. Legislation had to be considered and issues which infringed on the practice of medicine had to be met. For our success in these matters we are grateful to our Legislative Committee, headed by Dr. Donnell B. Cobb. Its task was well done, and the medical members of the legislature gave their aid.

Medical meetings, mental hygiene meetings, and meetings concerning social hygiene and socialized medicine, postgraduate meetings, student meetings, and dedications took me, as an official, from the mountains to the seashore of North Carolina. I found that these meetings are well attended and that the papers are of a high order of scientific excellence. Such office is decidedly worth more than one is able to put into it.

In the death of our much beloved and able Secretary, Dr. Thomas W. Mason Long, we suffered a well nigh irreparable loss. Dr. Isaac H. Manning, of Chapel Hill, well known to all of you and well loved wherever he is known, has filled in the breach for us in the distinguished and able manner in which he has done all tasks assigned to him. His intimate knowledge of our organization and his thorough acquaintance with medical-organization finance are a wonderful asset to us.

Postgraduate medical study, under the guidance of our Medical Society, the Duke University Medical School, and the Extension Department of the University of North Carolina, has attained a high level of excellence and usefulness. We pray for its continuance.

The dreams of men whom I see and know in this Society and to whom I pay proper tribute have come true, and we have another excellent four-year medical school in North Carolina, the Bowman Gray School of Medicine of Wake Forest College. It will ably carry on the task which the devoted band of teachers at Wake Forest have so wonderfully done in the past. Wake Forest will continue to contribute richly to the medical life of our state.

To the Council of this Society, and to the Executive Committee also, I render my sincere thanks. They have met every issue that has come up and have given generously of their time and thought when most needed, acting with promptness and wisdom in meeting all problems.

Our North Carolina Medical Journal, under the able editorship of Dr. Wingate Johnson and the assistant editorship of his daughter, Miss Catherine

Johnson, has attained the recognition which it justly deserves.

My year has been a busy and an interesting one. I have touched the best in North Carolina and have been enriched by it. I wish to thank you for the courtesies which you have extended to me and for the privilege of having served you as president of The Medical Society of the State of North Carolina. The honor is a great one, and I am justly proud of it.

Our next order of business is the Secretary's report.

Secretary-Treasurer Manning:

Report of the Secretary-Treasurer

Dr. Long's death was a great loss to this Society and to the medical profession of the state. He was not only an excellent executive officer, but by his experience, sound judgment and influence in the General Assembly, he was able to suppress some undesirable movements and to bring to a successful conclusion much helpful legislation. He was always loyal to the best traditions of the profession, true to his friends, honest and outspoken in all of his public and personal relations, and ready to fight for a good cause. His influence in the development of the sanatoriums for tuberculosis at Sanatorium, Buncombe and Wilson Counties, in protective health measures in his home and neighboring counties, and his organization of the medical service unit at Roanoke Rapids are among his conspicuous services to the people of the state and the communities in which he lived and worked. To the upbuilding of this Society he gave unsparingly of his time and mind.

As your Secretary-Treasurer ad interim, it is my pleasure to report the very excellent condition of the Society in every respect. At the last meeting in May, 1940, Dr. Long reported the largest membership in the history of the Society—1737—and a cash balance of \$12,085.56 as of December 31, 1939. As of December 31, 1940, the membership reached a total of 1785 and the cash balance was \$13,641.65, and on May 15, 1941, the membership is 1641, and the cash balance is \$20,926.77. It should be emphasized that a large percentage of the income has been collected and the cash balance is at the peak. There are eight months remaining in the fiscal year.

The membership is about 20 per cent below last year's record. It is to be hoped that the delinquent members will pay up within the next two months, so that their names will appear on the roster.

The North Carolina Medical Journal

Included in the receipts and disbursements are those for the North Carolina Medical Journal which are as follows:

Receipts	
Appropriated by the Society	\$6,800.00
Advertisements, etc.	3,779.61
Total receipts	\$ 10,579.61
Total expenditures	6,716.00
Unexpended Balance	\$ 3,863.61

If the subscription price is placed at the very low level of \$3.00, and the membership of 1940 at 1785, the yield would have been \$5,355.00. This added to the receipts from advertisements (\$3,779.61) would make a total of \$9,029.61, and a profit of \$2,493.61. The actual cost of the Journal to the Society has been for 1940 \$2,336.39 or about \$1.30 per member.

Obviously the advertisements have been very help-

ful in financing this very well worthwhile enterprise. There may be a time, however, when this source of income may be less fruitful. On a basis of the receipts from the membership, the appropriations for the *Journal* in 1940 were 54.75 per cent of the income.

The budget for other activities of the Society amounted to \$9,600.00. The actual receipts and expenditures as shown by the audit of 1940 (December 31), are as follows:

Receipts	\$ 17,727.09
Expenditures	\$ 15,171.00

Excess of Receipts	\$ 2,556.09
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The budget for 1940 was \$16,400.00, so that the expenditures were less than the budget by \$1,229.00.

The membership of the Society is made up as of May 15, 1941, as follows:

Honorary Fellows	310
Fellows	1,331

It is interesting to note that one member paid up his back dues for more than ten years.

Honorary Fellowship in the Society is coming to mean something.

There will be many doctors in the military camps within the borders of the state. How many may become permanent residents remains to be seen. The Staff of the Veterans Hospital in Fayetteville and the Medical Staff of Fort Bragg have been invited to attend the meetings of this Society—a courtesy that I am sure the Society will approve.

The Constitution and By-Laws of the Society have been amended a number of times. The last published revision was in 1930, and some of the amendments made prior to this were omitted. There is on hand about a two years' supply of the 1930 edition. It seems to me it will be worth while to bring these up-to-date by inserting a mimeographed copy of the omitted and added amendments. It would avoid some confusion.

I. H. MANNING, M.D.,
Secretary-Treasurer.

Secretary-Treasurer Manning (continuing): I have a number of resolutions which were passed with respect to Dr. Long, some of which have already been published in the *Journal* and elsewhere.

President Haywood: Gentlemen, you have heard the report of the Secretary. What is the will of the House of Delegates in regard to Dr. Manning's report?

... On motion, duly seconded and carried, the report was accepted and filed as part of the minutes.

President Haywood: The next item on the agenda is the organization of the nominating committee. The members from each district will elect one representative to serve on that committee.

There will be a recess of ten minutes for the selection of the nominating committee.

... A short recess was taken at this point.

President Haywood: The meeting will please come to order. Dr. Manning, will you read the names of the representatives of the ten districts who have been elected as members of the nominating committee of the State Medical Society?

Secretary-Treasurer Manning: Mr. President, the names that have been turned in to me are as follows:

First District—T. L. Carter
Second District—K. P. B. Bonner
Third District—J. Street Brewer
Fourth District—H. B. Ivey
Fifth District—J. A. Shaw
Sixth District—W. B. McCutcheon

Seventh District—J. A. Elliott
Eighth District—Fred M. Patterson
Ninth District—R. S. McElwee
Tenth District—B. O. Edwards

President Haywood: I ask that Dr. H. B. Ivey act as temporary chairman of this committee. When you get together for your first meeting you will select a permanent chairman.

The Committee will bring in nominations for the following officers of the Society: president-elect, first and second vice presidents, secretary-treasurer, delegates to the American Medical Association, delegates to the Medical Society of Virginia, and delegates to the South Carolina Medical Association, and will recommend the next place of meeting.

Dr. F. Webb Griffith, our President-Elect, will appoint the committees.

The doctors of Transylvania County are asking for the organization of a county medical society and have sent in a petition, which reads as follows:

May 8, 1941.

Dear Dr. Manning:

On May 6, the majority of the physicians in Transylvania County met and decided to organize a county medical society.

There are eight graduate physicians in the county. Seven are in general practice and one is in public health work. All but one of the eight have either joined or expressed definite interest to join Transylvania County Medical Society.

We would like to have the usual charter and by-laws for our medical society.

Will you please advise us and send us any information that will aid us in forming our organization?

Respectfully yours,

J. SADER, M.D.,

Sec.-Treas.

Transylvania County
Medical Society.

President Haywood: Dr. Harold S. Clark, the Councilor for the Tenth District, is not present, but Dr. Manning had a letter from him about this matter. Dr. Manning, will you read the letter?

Secretary-Treasurer Manning: I do not know just what the procedure is for taking up this matter. I presume that any petition for the formation of a county medical society should be referred to the councilor for the district. Since Dr. Clark is the Councilor for the Tenth District, in which Transylvania County is located, I referred the matter to him. In reply he wrote this letter, which I take as a recommendation from Dr. Clark for the organization of this county society:

May 15, 1941.

Dr. I. H. Manning
Chapel, Hill, N. C.
Dear Dr. Manning:

Since receiving your letter concerning the organization of a Transylvania County Medical Society, I have talked to Dr. Sader and he states that he has collected dues from all the prospective members and is sending them in to you.

If this goes through in time, I shall be glad to recommend the organization of the Society. There is a group of very good men in this County, most of whom I know personally, and I feel that a Society would be beneficial to them.

I am not sure that I will be able to attend the State meeting, but am hoping to do so and to see you there.

Yours sincerely,
H. S. CLARK.

President Haywood: The House of Delegates has the authority to grant or to refuse this petition. Is there a motion?

... It was moved and seconded that the petition for the organization of a county medical society in Transylvania County be granted. The motion was carried.

President Haywood: The next order of business is the reports of the Councilors. We will hear first from Dr. Walker, Councilor of the First District.

Dr. H. D. Walker: I have nothing in particular to report, Mr. President. Everything is going along all right, and there is peace and harmony in the First District.

Second District—T. L. Lee—no report.

Third District—W. Houston Moore—no report.

President Haywood: We shall next have the report of Dr. Mitchell, Councilor for the Fourth District.

Dr. G. W. Mitchell: I should like to report that our district is in a very healthy condition and that there does not seem to be any trouble amongst the men nor anything between the physicians and the public, with the exception of one matter; and that matter is an encroachment of a political nature on the Nash County medical profession. It seems that the County Commissioners are attempting to force the Health Officer out of his position in the county, notwithstanding the fact that he was regularly elected by the County Board of Health. It is rather embarrassing to the medical profession to have the County Commissioners refuse to accept a regularly appointed medical officer that the County Medical Society wishes to see appointed.

Secretary-Treasurer Manning: We have a resolution in respect to that.

Dr. Mitchell: Yes, sir, I know that, and that is why I brought it up. The resolution is from the Edgecombe-Nash Counties Medical Society, and reads as follows:

"Whereas the practice of medicine, in its various branches, is a skilled and learned profession, dealing with the lives and health of human beings, whose members are especially fitted by learning, training, and experience to outline and supervise measures proper to be taken for the protection of the public health, both among adults and among children; and

"Whereas the health program now in effect in North Carolina recognizes this fact by providing as a state-wide policy that each county board of health shall include three professional men, constituting a majority of such board; and

"Whereas under the present plan of operation North Carolina has attained national eminence in the field of public health, its policies and forms of organization being often recommended by public-health specialists as a model for other states; and

"Whereas the General Assembly of North Carolina, in its 1941 session, passed special legislation for one county by which the Board of County Commissioners, a political body, shall have a veto power over the selection of the County Health Officers by the only constituted Board of Health of such county, which legislation, if held constitutional, would likely be an entering wedge to subordinating the county health program to the interests of local politics and would be a grave backward step;

"THEREFORE BE IT RESOLVED that the Medical Society of the State of North Carolina go on record as opposing any legislation by which the selection of county health officers or the execution of county health programs be placed under any lay political body; and

"BE IT FURTHER RESOLVED that the Secre-

tary be instructed to give publicity to this resolution through the newspapers of the state."

I make the motion that the House of Delegates disapprove legislation pertaining to health officers, other than the standard health regulations for the North Carolina State Board of Health.

Dr. K. P. B. Bonner: I second the motion and move, as an amendment, that the resolution be adopted as an act on the part of this body.

President Haywood: Do you accept the amendment, Dr. Mitchell?

Dr. Mitchell: Yes, sir.

... The amendment was seconded, and Dr. Bonner's motion and the original motion when put to vote were carried.

Fifth District—J. G. Pate—no report.

President Haywood: We will go on to the report of the Sixth District, Dr. George L. Carrington, Councilor.

Dr. George L. Carrington: The Sixth District remains in good condition, except that possibly there are too many malpractice suits. Any improvement in that situation of course depends very much upon the doctors in the district being careful not to drop any slurring remarks about their predecessors in the cases they are treating. I hope everyone in attendance upon this meeting will impress upon his fellow physicians at home the importance of not making any slurring remarks about the work of any of his colleagues—especially about fractures—because there is always the chance of such suits coming up.

Warren County still remains unorganized. I have tried to get the physicians there to connect up with an adjoining county, but still without success.

We have had several complaints about a so-called Dr. West, a man who has had no medical training and who appears to be a cancer quack, practicing near Apex. A number of doctors have written in about his treating cases of cancer. As nearly as we can get at it, he makes no charge, but his wife sells a concoction to heal the cancers. So far the doctors who have information about the situation have been unwilling to present the data in any form in which it could be acted upon. The solicitor of the district, I am informed, is quite willing to proceed with prosecution and the Board of Medical Examiners is willing to proceed with any action against this practitioner if they can get witnesses that will stick. If the members of the state and district societies want it done and are willing to go to the trouble, it can be stopped.

President Haywood: Dr. Carrington, we are deeply indebted to you for your report.

Is there any discussion?

Secretary-Treasurer Manning: Following up what Dr. Carrington said about the cancer quack, I had a letter from the eastern part of North Carolina a few days ago about practically the same sort of thing. Such matters are constantly coming up. It comes to a question of policy. Is the Medical Society going to undertake to prosecute these cancer quacks? If so, just what machinery are you going to set up to do it? The Councilor in the district, of course, may or may not take action in the matter. Dr. Carrington can not get any evidence. Perhaps the doctors are uncertain about their position and do not want to get up before a jury and testify. It is an unpleasant situation to be in. It seems to me that the Society should adopt some policy which it will follow in such matters.

Dr. Bonner: The State law very clearly says that it is the duty of the State Board of Medical Examiners to enforce the Medical Practice Act. As you say, however, evidence must be complete when

the case goes into court, because usually local sentiment is against you.

Dr. W. D. James: I should like to report for the Board of Medical Examiners of North Carolina in regard to the complaints that come to us. We get these complaints constantly, and we go back to the county medical society and try to get them to furnish the evidence. The states that are successful in prosecuting quacks employ a whole-time man and get him to go in and get the evidence. The only way in which this problem can be met is to have a whole-time man who will go into each community and investigate every complaint. As soon as we get a complaint we start on a still hunt and try to get the evidence. So far we have never been able to get any doctor on the stand who has it. The State Board of Medical Examiners would certainly be sticking out its neck if it went ahead on the little evidence it is able to obtain. In several cases we have stopped unqualified persons from practicing. The State Board of Medical Examiners investigates every one of these cases, but so far we have never been able to get a single doctor to promise to go before a jury and testify that these fellows are practicing medicine illegally.

Dr. Carrington: I think the thing could be simplified if the doctors, whenever they have a patient who has been treated by a quack, would get an affidavit from the patient who has taken the treatment and forward the affidavit to Dr. James, of the examining board. He could then begin accumulating data and sifting it out and could act.

Dr. J. Street Brewer: We have been very successful in handling these fellows who, after having some medical training, are practicing without license. We have been able to handle most of them by threats. But these men who have never studied medicine we can not reach. When it is brought to the attention of the Board of Medical Examiners that someone is practicing medicine in the State without a license, after they make some investigation to satisfy themselves that it is true, they bring the matter to the attention of the Attorney General. If he is satisfied that there is probable cause he directs the solicitor of the district to present the facts to the grand jury. It comes right back to the place where the offense is committed. Unless the Attorney General or the solicitor has the evidence, and unless you doctors in that district are willing to go on the stand and testify, or will go before the grand jury, nothing can be done with these quacks. If we would go before the grand jury ourselves, or go out and work among the laity and get them interested enough to go before the grand jury, we might get something done, provided we can bring enough pressure to bear on the solicitor.

Dr. B. J. Lawrence: I believe Dr. Brewer has correctly stated the law as it applies to the Board of Examiners. They investigate and report to the Attorney General, and he reports to the solicitor, and usually the matter ends there. The Board of Examiners usually have their hands tied. It is my opinion that the statute must be amended or changed in some measure before these men can be adequately dealt with.

Dr. Mitchell: In case the House of Delegates or organized medicine takes any stand in the matter there is a liability on the medical society for damages. I think we should consider that. The Society in past years had to pay damages in just such a case as that. I think we ought to go very slowly in doing anything as a society. The State of North Carolina has a legal body to act in such cases, and if we hire an investigator or start an investigation it seems to me that we are liable for

suit, if the man is not convicted.

Mr. W. J. Smith, Secretary North Carolina Pharmaceutical Association: Mr. President, may I have the privilege of the floor?

... It was moved that Mr. Smith be given the privilege of the floor, which motion was seconded and carried.

President Haywood: Mr. Smith, we shall be glad to hear from you.

Mr. Smith: About a year ago a similar case arose in Buncombe County. The Board of Pharmacy cooperated with the County Medical Society and investigated A. J. Goforth, who was operating as what he called an herb specialist. We convicted that man and ran him out of the state. That was a big thing, because we estimated that in eight years he had taken in over \$50,000. This case at Apex is very similar. That man is advertising as "Dr. West" without any medical degree whatever. Several months ago I went there with a reporter. I know the situation you men are confronted with; you do not have time to do the work yourselves and do not have a paid investigator. The North Carolina Board of Pharmacy does have two paid investigators. We are willing to act with the Board of Medical Examiners, which is the agency through which this thing should be attacked. We already have sufficient evidence to start the case, but we need more. Although we know he is an outright quack, there are a lot of individuals in Raleigh who will testify that he has cured them of cancer. In fact, he has in his laboratory about fifty jars containing tissue of some sort. He says that is from tumors or cancers. He told one patient from Tarboro that if she took any sort of medication from a physician she would die in thirty minutes. There are records in the State Board of Health to that effect. She died a short time ago.

I appreciate your hearing me on this subject. I should like to say that we are ready to cooperate with you in any way we can, speaking for the North Carolina Board of Pharmaceutical Examiners and the North Carolina Pharmaceutical Association.

President Haywood: We thank you, Mr. Smith, for bringing us this information.

Seventh District—Robert H. Crawford—no report.

... The report of Dr. James H. McNeill, Councilor for the Eighth District, was read by Dr. Fred M. Patterson, as follows:

During the past year I attended two Executive Committee Sessions, the first in the fall of 1940. At that time the subject under discussion was the formation of Examining Boards for the Selective Service. The second meeting held in early spring 1941 was for the purpose of electing a temporary successor for Dr. T. W. M. Long.

I visited the Guilford County Society on two occasions. After careful inquiry, I found that there seemed to be no difficulties among the members. The meetings were well attended and the programs were excellent. I also attended a meeting of the Randolph County Society in Asheboro. This meeting, too, was well attended and the program was of very high order. In the fall of 1940, I attended the District Meeting held at Reidsville and considered this a visit to the Rockingham County Society. This group, too, was functioning smoothly and there seemed to be no strife among the members. The meeting was well attended and the program was excellent.

I have made several attempts to visit the Forsyth County Society, but have been prevented by pressure of work. However, I have talked to several of the doctors in that Society, and found that everything is going nicely. The meetings were well attended, and the programs excellent. An attempt was made

to visit the Surry-Yadkin Society, but I was unable to find the date and place of their meetings. Inquiries among the doctors in that group, however, show no difficulties.

The Wilkes-Alleghany Counties Society meetings have been held regularly in North Wilkesboro, with fair attendance. It seems impossible, however, for us to get any attendance from the members residing in Alleghany County. Our Society has had some trouble with druggists about counter prescribing. For this reason two members of our Society visited and talked to each druggist about this situation and obtained promises of better cooperation. We realize that it is impossible to stamp out completely this practice of counter prescribing, but we feel that our talks with the druggists have been moderately effective. Our town also has a chiropractor who has been prescribing medications. This, we thought, constituted practice of medicine without a license. We inquired into the legal aspects of such practice and found that it was considered only a misdemeanor and not a felony. After much discussion we decided that prosecution of the case would not be of great benefit and might have some unfavorable reactions among the public. Our Society would like to recommend to the Committee on Legislation that they make an effort to have the Medical Practice Act revised, so that practice of medicine without license would be a felony instead of a misdemeanor, punishable by a large fine or imprisonment or both.

In addition to visiting the various societies and attending the meeting of the Executive Committee, I have furnished information about the doctors in the district to Dr. Webb Griffith, Chairman of the Medical Preparedness Committee and I have learned the essential facts relative to military service about most of the men in the district.

Respectfully submitted,

JAMES H. McNEILL.

Eighth District Councilor.

President Haywood: We thank you, Dr. Patterson. Is there any discussion of Dr. McNeill's report? If not, we will proceed to the report for the Ninth District, of which Dr. I. E. Shafer is Councilor.

Dr. Shafer: I want to ask about one thing. Rowan County has about forty doctors, and Davie County has five. They want to join with us. During the past year they have met with us. I should like to have information from the House of Delegates as to how to combine the Rowan and Davie County Societies.

President Haywood: Will you put that in the form of a motion?

Dr. Shafer: I move that the societies of Rowan and Davie Counties be permitted to unite and form one society, with a charter as the Rowan-Davie Counties Medical Society.

... The motion was seconded and carried.

President Haywood: Is Dr. Harold S. Clark here, from the Tenth District? Or is there anyone representing him?

Dr. B. O. Edwards: Dr. Clark is unable to be here, Mr. President. I just want to say that the Tenth District is in good condition. We have some meetings each year which are very well attended.

President Haywood: That ends the reports of the Councilors. The next report is that of the Delegates to the American Medical Association, Dr. Wingate M. Johnson and Dr. W. T. Rainey.

Dr. Wingate M. Johnson: Dr. Rainey asked me to make the report for us both.

The ninety-first annual session of the American Medical Association was held in New York City

June 10-14. The enrollment exceeded by far all previous records, with a total registration of 12,864. While the added attraction of the World's Fair doubtless increased the attendance, the crowded scientific meetings, section meetings, and scientific exhibits, the close attention paid, and the intelligent questions asked in the discussions showed that a majority of those present were there because they wanted to learn something. The very full attendance upon the meetings of the House of Delegates indicated that its members took their responsibility seriously.

One could not fail to be impressed by the efficiency and the cordiality of the New York Committee on Arrangements. With meticulous care, every detail had been arranged for the meeting, and members of this committee were everywhere ready to give a helping hand where it was needed.

The House of Delegates had a busy but unusually harmonious series of meetings. The amount of business dispatched by this body is really amazing—especially in view of the absolutely democratic methods that prevail. This body is a living refutation of the often-heard statement that democracy and efficiency are incompatible. Following the address of Speaker H. H. Shoulters on Monday morning, the President and the President-Elect each addressed the House. Then the Secretary, the Board of Trustees, the Treasurer, and the "Standing and Special Committees" gave their reports. After this, various resolutions were introduced as new business. The House adjourned until next morning, in order to give the Reference Committees time to function.

The Tuesday morning and afternoon meetings were given over chiefly to the reports of the Reference Committees. The most important action taken, and the one that overshadowed all others in interest, was the adoption of a resolution pledging the resources of the A. M. A. to the federal government for national defense. A committee consisting of ten members of the House and five ex officio members from the A. M. A. officials was appointed, with Dr. Irvin Abell as chairman, to cooperate with the proper authorities of the federal government in carrying out the purpose of this resolution.

The election of officers, held at the final meeting on Thursday afternoon, was remarkable for its harmony. There was not a single contest, every candidate nominated being elected by acclamation. Dr. Frank Lahey, of Boston, was made President-Elect; Dr. Parke G. Smith of Cincinnati, Vice President; and Dr. William F. Braasch, of Minneapolis, member of the Board of Trustees to succeed the late Dr. Charles B. Wright. Dr. Herman G. Weiskotten, of Syracuse, was elected to the Council on Medical Education and Hospitals, to succeed Dr. Lahey. The only balloting necessary was to select the place of meeting for 1943. San Francisco, St. Louis, and Detroit all extended invitations, but San Francisco was chosen. Cleveland and Atlantic City have already been selected for 1941 and 1942 respectively.

North Carolina was allotted a third delegate for the next three years. Four states gained a delegate and four lost one this year. Because the membership of the A. M. A. has increased to more than 117,000, and because the constitution allows the House only 175 members, it was necessary to raise the ratio of state membership per delegate. Accordingly, the Apportionment Committee, headed by Dr. A. T. McCormack, of Kentucky, agreed to allow one delegate for each 930 members, or fraction thereof. North Carolina's membership for 1939 was recorded as 1867.

The predominant impression that most of us carried away from the meetings was that of the abso-

lute solidarity of the American Medical Association. This feeling of unity pervaded the atmosphere like the theme of a symphony. The persecution endured for more than five years by the doctors of America has brought them together as nothing else could have done.

(Signed) W. T. Rainey, M.D.
Wingate M. Johnson, M. D.
Delegates.

President Haywood: We are very grateful to you for your report, Dr. Johnson.

If I may digress for a moment, it was a great pleasure to hear the President of the American Medical Association, at the dedication of the Wake Forest Medical School, speak in such high terms of our representatives in the House of Delegates of the American Medical Association.

The next item of business is the report of our Delegates to the Medical Society of Virginia.

... No report.

President Haywood: The next thing is the report of the Delegates to the South Carolina Medical Association.

... No report.

President Haywood: The next report is that of the Committee on Medical Preparedness, of which Dr. F. Webb Griffith is Chairman.

Dr. Griffith:

Report of the Committee on Medical Preparedness

Your Committee on Medical Preparedness has had a rather busy year. It was our privilege to meet with a representative of the Adjutant-General's office for the selection of the Medical Advisory Boards. In the formation of the local draft Boards we had no part.

In most of the counties local committees have been formed whose duty it is to advise with the State committee and to make recommendations concerning the doctors in their respective counties.

These committees are classifying the doctors above the draft age into various groups such as those engaged in full-time health work, in full-time hospital work, in industrial medicine, etc. It is a strictly democratic process, for each physician is classified by a committee of doctors in his own county selected by his county medical society.

Within the year each doctor in the state has received a questionnaire which he has been requested to fill out. This is merely to gather information as to the medical strength of the country. So far in North Carolina about 80 per cent of these questionnaires have been returned. Some had the idea that by filling them out they might be committing themselves to military duty at a later date. Such is not the case; it is merely an inventory.

Instead of being a means of getting physicians into the service, it is in reality more to the contrary. During the last war many communities were stripped of physicians and it is to a large extent to safeguard the civil and industrial population that these questionnaires have been sent out. Thousands of doctors obviously unsuitable for military service could be used for greater and more effectual service in their own communities. To give these doctors the opportunity to render invaluable service is one of the chief objects of the questionnaires. If there be any here who have misplaced their questionnaires, duplicates may be obtained by applying to me personally or by mail.

I urge you to do this not as a favor to your committee, or to your State Society or to the American Medical Association, but as a patriotic duty. Let us continue to salute the flag and sing "God Bless

America", but do not let us place all the responsibility on Him. Benjamin Franklin stated: "We must hang together or we shall hang separately."

President Haywood: I happen to know that Dr. Griffith has been very active in the work of this committee and has answered every call when he was needed. The Adjutant General, the Governor's office, and I appreciate the fine work he has done.

Is there any discussion on this report? Do I hear a motion to accept it?

... It was moved and seconded that the report be accepted. Motion carried.

President Haywood: We shall next hear from Dr. Martin in regard to the Board of Examiners for Nurses.

Dr. Martin: For the past several years, Mr. President, the member of the Board from the North Carolina State Medical Society has been elected for two years. That has been contrary to law. The nurses' law explicitly states that: "A Board of Nurse Examiners composed of five members, consisting of three registered nurses to be elected by the North Carolina State Nurses Association and one representative each from the North Carolina State Medical Society and the North Carolina State Hospital Association, is hereby created, to be known by the title, the Board of Nurse Examiners of North Carolina. Each member of said board shall serve for a term of three years, or until his or her successor is appointed." It has been through an oversight of the House of Delegates or of your nominating committee, probably, that that has happened. Dr. Newell served for two years; Dr. Thompson served for two years; and the present member of the Board, Dr. McMillan was elected for two years. I feel, Mr. President, that all that is necessary is to call this matter to your attention and this error can be rectified. Our suggestion is that Dr. McMillan, as the present member, be confirmed for another year, and that will correct it. I have an opinion here from the Attorney General in which he says: "In my opinion the practice followed by the North Carolina State Medical Society has not been in accordance with the provisions of the statute, and in my opinion this failure to follow the provisions of the statute might be sufficient to upset some action of the Board. Regardless of whether any action of the Board is upset, it seems that when the provisions of any statute are so clear there is no reason why its terms should not be followed to the letter."

President Haywood: Is there any discussion of Dr. Martin's report?

Dr. B. J. Lawrence: Mr. President, I have no discussion, but I wish to move that the House of Delegates go on record as correcting the error which he says has been made and that Dr. McMillan be confirmed for another year.

... This motion was duly seconded and was carried.

President Haywood: Next will be the report of the Advisory Committee to the Industrial Commission. Dr. J. F. Highsmith, Jr., is Chairman.

Dr. Newsom P. Battle: Mr. President, Dr. Highsmith was unable to attend this meeting. He sent me the report, and if it is your pleasure I shall be glad to read it.

President Haywood: I think we should like to hear that, Dr. Battle.

Report of Advisory Committee to the Industrial Commission

I deeply appreciate the privilege of having served for three years on the Medical Advisory Board to the North Carolina Industrial Commission and have

been glad to give this time to the Commission, which I consider of vast importance to the doctors and hospitals throughout the state. I enjoyed the association with the doctors who have served with me and also the association with Dr. Horton of the North Carolina Industrial Commission and his associates. Dr. Horton, in my opinion, is doing a highly satisfactory job of a very difficult situation and I think it would be a hard task to replace him. I doubt that any of you fellows present here would like to fill his shoes. Pleasing the doctors, the hospitals, employers and employees as well as the insurance carriers is not an easy task.

During my short time on this Committee I think there has been a distinctly better understanding between the doctors, hospitals and the Industrial Commission. The recent agreement between hospitals and the commission relative to drugs, laboratory, etc., will relieve many a headache. I feel and hope that the doctors generally have a better understanding of the handling of the Industrial Insurance cases.

I would like to impress upon the doctors that the fee schedule book was compiled by members of the North Carolina Medical Society and that the Industrial Commission had nothing whatsoever to do with the fee schedule. The chief complaint in the protested bills is due to the fact that the doctors have not adhered to our fee schedule. About two years ago at a meeting of the Cumberland County Medical Society very few of the doctors present were even aware of the fee schedule book and only a very few of those who knew of the book governed their charges accordingly.

Since I became Chairman of the committee on May 1, 1940, there have been submitted and acted upon by the Industrial Commission 65,566 bills (this total amount covers the period May 1, 1940 through May 5, 1941, of which amount 13,243 were reduced. These 65,566 amounted to \$829,664.89 as submitted and the Committee approved \$729,744.66, showing a reduction by the Commission of \$99,890.23. Remember that these total amounts include not only medical bills but those for hospitalization, drugs, dentists, special nursing, etc.—in fact, all bills submitted and acted upon.

Of the 65,566 bills submitted to the Commission, only 118 have been appealed to the Special Medical Committee, 11 of which were from out-of-the-state doctors and 4 from dentists. Of the 118 bills reviewed by the medical committee 38 were increased and one bill was further reduced from the amount approved by the Commission originally. The total amount of these 118 bills as submitted to the Commission was \$10,525.26 and were approved in the amount of \$5,807.81, showing a reduction of \$4,717.45. The total amount of increases made by the medical committee on the 38 bills increased was \$407.50, which made a total approved amount of \$6,215.31 after the committee had taken action as against \$10,525.26 originally submitted to the Commission.

I would like to state again that I have thoroughly enjoyed my service on the Committee and feel that the time spent was educational and beneficial. It is my belief also that the doctors who serve on this Committee should receive some financial consideration for spending their entire day away from their practice.

Respectfully submitted,
J. F. HIGHSMITH, Jr.

President Haywood: Is there any discussion of this report?

Dr. Paul W. Sanger (Mecklenburg): I know that this report is submitted in good faith, but I think that cutting those fees is the most pernicious practice in any medical matter in this state. They

cut our fees and disagree as to the number of times we should see our patients and do not follow the fee schedule. In the State of South Carolina, where there is the same insurance rate as in North Carolina, their fees are higher and are never cut. There is a dictator in Germany, and there is a dictator in North Carolina when it comes to adjusting our fees.

Dr. J. A. Elliott (Charlotte): I should like to sanction what Dr. Sanger says. I do not think Dr. Horton has any conception of what adequate compensation is. Recently I have had several rounds with Dr. Horton myself and have gotten no satisfaction whatsoever. I have taken the matter up with the insurance company myself, and they have paid me my fees over his head. Not only that, but they have requested the Commission to pay the bills as submitted. I might cite the case of one patient from the Cannon Mills, whom I was asked by the Cannon Mills to cure if possible. I sent in my bill, and Dr. Horton cut it to \$76. I wrote him that my expense in the case amounted to more than \$75, and he told me that it was impossible to do anything more. I replied that there was very little involved but that it was a matter of principle with me and I was willing to come to Raleigh to discuss the matter. I feel that this is a very important thing and is something of which this Society should take cognizance. Recently I told an insurance company that I would refuse to do the work at the fees Dr. Horton allowed. They have arranged for a conference with Mr. Wilson, who seems to be the man in authority, when he next comes to Charlotte.

Dr. R. B. Davis (Guilford): I notice that Dr. Highsmith's report gave some figures as to the number of cases submitted to the Commission and the number appealed. There are no figures, however, as to the number of cases in which the fees were cut, and that is the matter in which doctors are interested. No one can afford to leave a busy practice and go down to Raleigh to ask about five or ten or fifteen dollars, maybe not even for a hundred dollars. Dr. Highsmith has given us a very good report, but I fear there will never be harmony between the Industrial Commission and the physicians as long as Dr. Horton stays there. If we had some figures as to how many bills were submitted, and not only as to how many were appealed, we might know the real situation. I, for one, have never appealed a case. Last year I asked how many cases had been appealed, and my question was very promptly answered. I asked my informant how many doctors whose bills were being considered were notified in time for them to appear at the meeting of the committee. The doctor, whoever it was, said he did not know how many had been notified, but that not one had appeared at any meeting at which the bills were being considered by the Advisory Committee. If that information is correct it seems to me that the doctor who appeals his case by letter and does not appear in person signifies only one thing; he does not believe he will accomplish anything and does not waste his time in going. I hope something may be done. The gap is widening, and it is not the fault of the Committee. Those men have worked hard. But there is something wrong somewhere, either with the North Carolina Industrial Commission or with the North Carolina State Medical Society or with both; and here, it seems to me, is the logical place to begin to try to correct it.

Dr. Newsom P. Battle: I did not come down here, Mr. President and gentlemen, with the idea of taking up Dr. Highsmith's burden, and I am not giving the view of the committee on this question and on some of the points that have been raised here this afternoon. While I do not know that I

would be able to explain anything, I do not wish to shirk any responsibility that I may have as a member of the Advisory Committee, and if I can do so I shall be glad to answer some of the comments. I do not care to be heckled, but I shall be glad to give you any assistance I can.

President Haywood: I have served on this committee in the past. The highest authority in North Carolina is the Governor, and I know the Governor will talk the matter over with this committee from the State Medical Society at any time and do all in his power to correct any injustice to the medical profession. Governor Ehringhaus took it in hand and bettered things considerably for the medical profession for a while at least.

Do I hear any motion as to this report? Accepting it does not necessarily mean that you approve it, but I think we should do the committee the courtesy to accept their report.

... It was moved that the President appoint a special committee to consider the report of the Advisory Committee to the Industrial Commission and the matters brought out in the discussion here and to make recommendations to the next meeting of the House of Delegates. This motion was seconded and was carried without a dissenting vote, and the President appointed the following as members of the special committee: Dr. R. B. Davis (Guilford), Dr. Ben. J. Lawrence (Wake), and Dr. W. B. McCutcheon (Durham-Orange).

President Haywood: The next report is that of the Advisory Committee on Maternity and Infancy for the Children's Bureau, of which Dr. Aldert S. Root is Chairman.

... No report.

President Haywood: We will go on to the report of the Advisory Committee to the Woman's Auxiliary, Dr. Caroline McNairy, Chairman. Dr. McNairy, I see, is not here. Dr. Strosnider, will you report for the Committee?

Dr. C. F. Strosnider: Mr. President, all assistance possible has been rendered to the Woman's Auxiliary, especially with reference to forming a committee for British aid. I advised them to organize such a committee, as I thought before the year is out we might need a committee for American aid, too.

President Haywood: Thank you, Dr. Strosnider.

The next report is that of the Committee on Cancer. Dr. H. B. Ivey is Chairman.

Dr. H. B. Ivey: Before presenting my report, Mr. President, I should like to say that some weeks ago a man appeared in my office, very indignant, and said that his wife had cancer of the uterus and that he wanted Dr. West to treat her but that Dr. West had been hired by the North Carolina Medical Society not to treat any more cases of cancer of the uterus. So I think you will have no more trouble with Dr. West.

Report of the Cancer Committee

Your committee in its report last year stated their belief that the proper approach to lay cancer education was through the senior students in high schools and colleges. This idea was not original with us. It had been used by some of the tuberculosis associations over the country. Your committee decided to adopt it because they felt that facts given to these youths would be retained. These boys and girls will be the men and women of tomorrow. They will use this knowledge. If they can all be reached the problem of cancer education and cancer control will soon be solved.

The task of having a lecture on cancer control delivered in every high school and college in North Carolina is a great undertaking. Your committee

discussed ways and means of approach to such an ambitious program. They finally decided to ask the assistance of the school authorities of the state. Dr. Clyde A. Erwin was asked to sponsor the work in the high schools. He published an article in the *State Teachers Magazine* asking the cooperation of all high school principals in the state. He then asked the committee to write an article for this magazine. This was done by the committee. A short plea by us asking for the help of the high school faculties was published by this same Journal. The response from these articles was not very great. They were evidently not read by some and did not appeal to others. The committee then decided that some other more personal avenue of contact must be used. We wrote every county school superintendent in the state and every high school principal in North Carolina. There was between nine hundred and a thousand of these letters. The reaction to these letters was very gratifying and the work was soon well under way.

The next big thing that faced the committee was to furnish speakers and literature to these schools. We then wrote the secretary of every organized medical society in the state asking them to assist us by having their societies appoint speakers for the schools in their respective counties. The response to this request was extremely satisfactory and the cooperation of the medical profession very gratifying. The interest shown by the physicians in this type of work was even beyond the expectations of your committee.

After the machinery for the work in the high schools had been set in motion the colleges were the next consideration. The committee reached the conclusion that the best and quickest method of reaching the colleges was to contact the college physicians of the several institutions of the state. A letter was written to the attending physician at each college except the ones having medical departments. In these some member of the medical faculty was asked to take charge of the program. A favorable reply was received from most of these physicians. A lecture was delivered in fourteen of the colleges and universities. In some of these only one lecture was delivered to the entire student body. In some of the larger institutions, such as the State University, a lecture was delivered each morning for a week so that every student would have the opportunity of attending. We feel that great good will come from these efforts in our higher seats of learning.

The Women's Field Army of the American Society for Control of Cancer under the command of Mrs. George E. Marshall of Mt. Airy, North Carolina, has done good work this year. This organization, as you know, has for its function adult education in cancer control. This year's work just carried out in the past month was very comprehensive. The committee has been called upon to advise them in their work. We also furnish a list of physicians scattered over the state to whom they could go for advice. These men also furnish them with speakers for their lay meetings. Dr. Randolph Jones of Duke Medical School served as educational secretary to this organization. He rendered them a splendid service.

In conclusion we would like to give a short resume of this report.

1. We wrote to all the high schools (nine hundred) in North Carolina. Each high school in thirty-five counties had a cancer program and forty-five high schools in counties not participating were supplied with literature.

2. All of the colleges and universities were asked to carry out the program. Fourteen complied with the request.

3. The Field Army was assisted in their campaign of adult education.

4. All organized medical societies were invited to take part in this program.

Finally the Committee would like to thank the medical profession whole-heartedly for its help and kind consideration. We would like to give the names of the men who so enthusiastically worked with us, but the list would be too long.

Respectfully submitted:

H. B. Ivey, M.D.

T. Leslie Lee, M.D.

C. C. Carpenter, M.D.

Expenses North Carolina Cancer Committee

Long Distance calls	\$ 5.30	
Telegram .....	.63	
Postage and express	40.02	
Stationery	25.00	
Mimeograph work	3.25	
Traveling Expenses	4.35	
Films and Literature	40.00	
Secretarial Expense	25.00	
	<hr/>	
	\$143.55	
Cash on Hand	\$288.00	
Balance left in Treasury.....		\$144.45
Less (Intangible Tax).....		.11
		<hr/>
		\$144.34

President Haywood: Dr. Ivey, I wish to thank you for your splendid report. I am sure this House of Delegates is grateful to you for the work you have done.

Is there a motion to accept the report?

... On motion, duly seconded and carried, the report of the Committee on Cancer was accepted.

President Haywood: The next report is that of the Committee on Commercializing Drugs, and we will hear from Dr. James M. Northington, the Chairman.

Dr. James M. Northington: This seems almost a hopeless task. I am not prepared, as Chairman of this committee, to suggest the enactment of any more laws. Some time ago it seemed to me that something might come about through another line of attack, so I wrote this letter to every daily newspaper in North Carolina:

"I am writing as chairman, of a Committee appointed by the Medical Society of the State of North Carolina to undertake to abate the advertising in the State of injurious drugs or "cures".

"Our state spends much tax money in the promotion of health and prevention of disease. Our health officers know whether or not claims made for drugs or "cures" are justified; and these health officers are not in the private practice of medicine, so are in position to express unbiased opinions.

"A good many folks consult their banker before making investments, and often the banker is able to supply information about promoter or plan which proves profitable.

"I am asking if you will submit any and all advertisements of drugs or "cures" offered your paper to either (1) the State Health Officer, or (2) to your City or (3) County Health officer, and give consideration what pertinent facts he will be able to supply. I am not asking you to promise to accept the recommendation of the health officer; only that you will give it consideration.

"This letter is being written to each daily newspaper in the state.

"Will you not authorize me to report to the State Medical Society that you will adopt this plan? I trust you will."

A similar letter was sent to every radio broadcasting station in the state. The idea behind the

letters, Mr. President, was to appeal to these persons as taxpayers and to imbue them with the idea that tax money ought to accomplish some good and that tax money is spent for the prevention of disease.

Nearly every daily newspaper in the State replied and nearly every one of the broadcasting stations. I shall read you just a few samples of the letters received.

From the Winston-Salem Journal and Twin City Sentinel:

"Our advertising manager has referred to me the form letter which you addressed to him under date of May 2.

"We are always glad to discuss any of our policies or practices with interested citizens and we shall be happy to discuss the matter of drug advertising with any of the officials mentioned in your letter.

"There are many practical difficulties in following a plan such as you have briefly suggested in your letter. I think these difficulties will be obvious to you upon further reflection. However, we shall be glad to discuss any ideas or plans that you may have in mind."

From The Evening Telegram, Rocky Mount:

"Your letter of May 2nd addressed to our Advertising Manager on the subject of injurious drugs and cures which you explained are advertised in our state when they are not justified. It occurs to me that a constructive approach to this matter would be by asking you to be more specific in just what instances you have in mind, for I don't believe that you would find all state, city or county health officers in complete agreement and we have long since adopted a program of declining advertising copy which made flattering claims or which insisted on cures in the instance of disease where this was questionable. Of course we would not agree to submit our advertising pages to the review of the physicians of the state or of the city or county, any more than we would submit our financial pages to the banks or society page to the heads of the literary clubs.

"On the other hand, we believe that the newspapers of the state want to do and will do a public-spirited job in preventing the advertising of nostrums of doubtful value when the point is settled that such is the case."

From the News and Observer, Raleigh:

"In principle, we are heartily in accord with the movement you are starting to eliminate fraudulent or unethical medical advertising, but we doubt the advisability of placing the right of censorship in the hands of representatives of the State Board of Health.

"The News and Observer, for a great many years, has been accepting only advertising that has been approved by the American Newspaper Publishers Association. In other words, we refuse all advertising guaranteeing a cure and all advertising pertaining to tuberculosis, heart disease, epilepsy, etc. We would like to have the opportunity to receive your suggestions on the advertising that we should not accept, but we insist that the final judgment be left to The News and Observer Publishing Company and not to any public health officer. In fact, we had much rather have your opinion on it than the doctors' connected with public health. In your capacity as the Editor of the Tri-State Publication, you are undoubtedly familiar with the situation that existed in Columbia, S. C., where, up until a few years ago, they were forbidden to carry Vick's advertising which, I am sure you agree with me, is perfectly harmless. Also, another illustration, is a man that I know in public health service, who feels that the advertising of aspirin is a very dangerous

thing because of the possibility and not the probability of aspirin bringing on aspirin poison.

"It seems to me that if your organization could work out some plan whereby you could advise the newspapers as to what copy they should or should not accept and let the newspapers be the final judge as to whether or not the copy appeared, it would be better than having the newspapers submit the copy to a health officer. We would be glad to cooperate in an undertaking of this sort, but we would not be willing to turn over to a health officer the right to say what advertising we could or could not accept."

From The Raleigh Times:

"Your letter of May 2 regarding medical advertising copy is quite interesting.

"We thoroughly approve your idea, and have been for some time carefully scrutinizing medical copy which claims cures.

"We shall be glad to follow any plan which would seem to be appropriate for the newspapers as a whole in North Carolina in securing the objective you have in mind."

From the Kinston Free Press:

"Answering your letter of May 8, we write to advise that it has been our policy for many years to exclude from our advertising columns advertising of questionable goods.

"It has been our practice to consult our health authorities from time to time in reference to such advertising which we felt was questionable or about which we haven't had prior information.

"While we would not commit ourselves definitely to submit all drug advertisements to health authorities, you can count on us to cooperate in endeavoring to exclude from our columns those that are questionable and spurious."

From the Wilmington Star-News:

"We do not see where any good purpose could be accomplished by submitting to you medical copy sent to us for publication as advertising.

"We endeavor to keep our advertising columns clean, not alone medical copy, but other advertising submitted and only accept advertising from reputable advertising agencies.

"For your information, the Federal Trade Commission has supervision over mis-statements in all type of advertising and to submit copy to you, we feel is unnecessary."

From the Hickory Daily Record:

"We shall be very glad to work through our local medical society in an effort to eliminate advertising of injurious drugs or 'cures'.

"As you understand, an arrangement would have to be worked out on a practical basis so that we could consult some responsible physician and find out without delay concerning a given product which had been submitted to us for advertising.

"We do not believe that any responsible newspaper wants to advertise a remedy that is injurious, drug-forming or recommended as a cure when as a matter of fact it is a fake."

From the Goldsboro News-Argus:

"I have your letter requesting us to submit all advertising to censorship by state or local county health officers.

"Since you say you have written all daily papers of the state on the subject I think it might be well for the whole matter to be taken up at the next meeting of representatives of the daily papers which will come next month in Charlotte."

From Radio Station WBIG, Greensboro:

"We have been working very closely with our city health officer, Dr. C. C. Hudson. I think he will bear me out in telling you that we do not carry any 'cures' over this station.

"Our continuity is periodically sent to the Federal Trade Commission in Washington for inspection.

"We are enclosing you herewith a copy of the NAB Code which we follow out very carefully. WBIG was the first station in North Carolina to censor its medical advertising, and this fact will be borne out by Dr. Reynolds of the State Medical Department, who carried an article in the health journal.

"We assure you of our cooperation."

The Greensboro News Company:

"We have attempted several times to put across advertising campaigns designed to give our readers reliable information and suggestions covering health matters, but in every instance such campaigns have been blocked by the medical profession as unethical and too costly."

I answered their letter and asked them to give me more information. This is their reply:

"Referring to your letter of May 16, our first experience in trying to work with the medical profession on publicity matters was with dentists. We made two attempts to get dentists in Greensboro and vicinity to underwrite an educational advertising campaign on the care of the teeth. This campaign was prepared by an outstanding Southern advertising agency in cooperation with officials of one of the state dental societies. I have forgotten the details and our files have long ago been cleared of this material. All of the dentists thought it would be a fine thing to publish in our newspapers, but they were unwilling to spend the small individual sums necessary to put the campaign across because they felt it was unethical to run such advertising.

"Later on, another attempt was made to develop a similar campaign with the dentists of this territory and this, too, was unsuccessful.

"Two or three years later, a campaign was developed for physicians and surgeons which had the endorsement of the American Medical Association, as I recall, and a number of state medical groups. This campaign was put before the local medical organization and, as I recall, the opinion was that the publication of this copy would do a great deal of good, but we could get no active support and no contributions to the campaign.

"Still later, we approached the Guilford County Medical Society regarding an institutional advertising campaign in our newspapers and we obtained several excellent interviews with the head of the Society and developed what we thought an excellent plan for educating the public regarding the importance of physicians and surgeons and the advantage of consulting them first of all about health matters. When this campaign was placed before the entire body of physicians it was impossible to get their cooperation.

"It has been our observation that medical organizations and individual physicians are not averse to seeking free publicity at all times regarding their organizations and activities, but that when there is any suggestion as to using paid space, it is immediately branded as unethical.

"We hold no brief for patent medicine copy and think a lot of copy is prepared and published that should not be allowed in print. On the other hand, we feel that while newspapers have an obligation in educating the public, this obligation should be shared, at least in part, by organized medical men. I think physicians and surgeons have suffered a loss of income and that the public health has suffered by the lack of proper health education through paid advertising. If newspapers were so set up that they could operate on circulation revenue alone, then I think this obligation would be wholly that of publishers. This is not the case, however, and

paid advertising is essential to the successful operation of daily papers.

"I don't think medical organizations or medical men should adopt the style of advertising that is published by patent medicine concerns, but I do think they could emphasize the fact that every person should have annual or semi-annual check-ups and that in case of all even minor illnesses, physicians should be consulted promptly. I think such copy can be written in a manner that will bring increased confidence and good will to physicians without violating any vital ethical rules."

President Haywood: Dr. Northington, we are greatly obliged to you for such a full and careful report. You have gone to a lot of trouble, I am sure, and we are very appreciative of your service to us.

Is there any discussion of this report? If not, the Secretary will enter it on the minutes.

Next we shall have the report of the Finance Committee, of which Dr. Vance P. Peery is Chairman.

Dr. Vance P. Peery: In addition to the regular audit, Dr. Manning had another audit made on May 15. Both audits will be published in the *Journal* and will be available to you.

I have a very short report to read.

Report of the Finance Committee, 1941

Mr. President, Members of the House of Delegates:

In a large measure due to the good judgment and untiring effort on the part of Dr. T. W. M. Long, the finances of the Society are in sound condition. This is shown in detail in the auditor's report, which will be published.

Only two or three minor changes have been suggested by Dr. Manning, our acting secretary and treasurer. The Society is indeed fortunate to be able to have Dr. Manning in this capacity.

1. There was an additional item of six hundred dollars voted by the Executive Committee to continue Dr. Long's salary until May 1.

2. There is an additional delegate to the A. M. A. which increases that item one hundred dollars.

3. The guest speaker is provided one hundred dollars for expenses.

4. We recommend Miss Johnson, Assistant Editor of the *Journal*, to have seventy-five dollars per month.

All of the above do not total nearly the amount of the Legislative Committee's expense, which we do not have this year.

Respectfully submitted,

Vance P. Peery, M.D., Chairman
Wm. M. Coppridge, M.D.
Westbrook Murphy, M.D.

AUDITOR'S REPORT ON THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Exhibit "A"

CASH RECEIPTS AND DISBURSEMENTS AND COMPARISON WITH BUDGET—YEAR ENDED DECEMBER 31, 1940

RECEIPTS:	Budget Provisions For Year 1940	Actual Receipts and Disbursements	Budget Over or Under Provided and/or Expended
Current and Back Dues (Refunds \$75.00 Deducted From Actual Receipts)	\$11,400.00	\$12,418.73	\$ 1,018.73
Money From Advertising	1,000.00	3,733.41	266.59
Certificate of Deposit No. 58 to General Checking Account	—	1,000.00	1,000.00
Interest on Deposit at 2½%	187.50	150.00	37.50
Refund—W. R. Algeo, Traveling Expenses	—	378.75	378.75
Subscriptions	—	46.20	46.20
Total Receipts	\$15,587.50	\$17,727.09	\$ 2,139.59

DISBURSEMENTS:

All Officers Except Secretary:			
Stationery	\$ 100.00	\$ 81.13	\$ 18.87
Councilor's Travel	250.00	250.00	—
Legislative Committee	800.00	800.00	—
Executive Committee	500.00	188.42	311.58
Other Committees	600.00	436.01	163.99
President's Travel	400.00	400.00	—
State Meeting Reporting	600.00	655.84	55.84
A. M. A. Delegates	200.00	200.00	—
Medical Preparedness	600.00	600.00	—
Total	\$ 4,050.00	\$ 3,612.30	\$ 437.50
Secretary's Office:			
Salary	\$ 2,400.00	\$ 2,400.00	—
Clerical Assistance	1,200.00	1,200.00	—
Stationery	100.00	—	100.00
Rent	300.00	300.00	—
Travel	600.00	600.00	—
Auditing	50.00	31.50	18.50
Miscellaneous and Emergency:			
Postage	—	39.15	—
Telephone	—	169.62	—
Office Supplies	—	135.14	—
Flowers	—	21.05	—
Taxes	900.00	45.97	—
Secretary's Bond	—	25.00	—
Returned Checks	—	11.00	—
Six Volumes Journal	—	12.00	—
Stationery for Webb Griffith	—	25.50	—
Fire Insurance on Office Equipment	—	56.00	—
2,000 Copies Dr. J. B. Sidbury's Speech	—	50.50	289.07
Total	\$ 5,350.00	\$ 5,142.43	\$ 407.57

TOTAL RECEIPTS—
Forwarded \$15,587.50 \$17,727.09 \$ 2,139.59

DISBURSEMENTS—
Forwarded 4,050.00 3,612.30 437.70

SECRETARY'S OFFICE—
Forwarded 5,350.00 5,142.43 407.57

NORTH CAROLINA MEDICAL JOURNAL:

Editor's Salary	1,200.00	1,200.00	—
Rent	300.00	300.00	—
Printing the Journal	5,000.00	4,916.27	83.73
Total	6,500.00	6,416.27	83.73
Total Disbursements	16,100.00	15,171.00	929.00

EXCESS OF RECEIPTS OVER DISBURSEMENTS—

FOR THE YEAR—
(To Exhibit "B") \$ 512.50 \$ 2,556.09 \$ 3,068.59

Exhibit "B"

AVAILABILITY OF FUNDS—DECEMBER 31, 1940

Unencumbered and Unappropriated Funds

Held January 1, 1940:		
Funds on Deposit—Checking Account	\$ 6,085.56	
Certificate of Deposit No. 59	5,000.00	
Certificate of Deposit No. 58	1,000.00	\$12,085.56

Add—Excess of Actual Receipts Over Disbursements For the Year (Per Exhibit "A") 2,556.00

Unencumbered and Unappropriated Funds Held December 31, 1940— \$14,641.65

Balance—December 31, 1940—		
Composed of Funds on Deposit, Citizens Bank and Trust Company, Roanoke Rapids, N. C.:		
Checking Account— (Per Exhibit "C")	\$ 6,141.65	
Certificate of Deposit No. 74	5,000.00	11,141.65
Savings Account—Bank of Halifax, Weldon, N. C.	2,500.00	13,641.65
Less—Certificate of Deposit No. 58—Put Into General Checking Account		1,000.00
Total		\$14,641.65

Exhibit "C"

RECONCILIATION OF FUNDS ON DEPOSIT WITH BANK December 31, 1940

Citizens Bank and Trust Company
Roanoke Rapids, N. C.

BALANCE—Per Bank Statement	\$ 7,876.93	
Add—Deposit in Transit	24.00	\$ 7,900.93
Deduct—Outstanding Checks:		
Number Payee Amount		
506 J. A. Fleetwood	\$ 2.00	
509 F. W. Griffith	75.00	
3	398.28	
4 W. M. Johnson	125.00	
5 D. B. Cobb	800.00	
6 F. W. Griffith	300.00	
7 Collector of Internal Revenue	9.00	
8 Cash (Stamps)	30.00	
9 Roanoke News	20.00	1,759.28

BALANCE—Per Records of Treasurer (Per Exhibit "B")	\$ 6,141.65
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CERTIFICATES OF DEPOSIT

Number	Date	Due	Interest Rate	Amount
74	Feb. 8, 1940	Feb. 8, 1941	2½%	\$3,000.00

AUDITOR'S REPORT ON THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Exhibit "A"

CASH RECEIPTS AND DISBURSEMENTS FOR PERIOD
JANUARY 1, 1941 TO MAY 15, 1941

RECEIPTS:

Current and Back Dues (Refunds of \$225.00 Deducted From Actual Receipts)	\$10,319.78
Advertising, North Carolina Medical Journal	1,221.60
Interest on Certificate of Deposit at 2½%	125.00
Total Receipts	\$11,666.38

DISBURSEMENTS:

All Officers Except Secretary:	
Expenses—Executive Committee	\$ 251.44
Other Committee Expenses	8.16
Total	259.60
Secretary's Office:	
Dr. T. W. M. Long, Salary, Traveling Expenses and Rent	\$ 1,050.00
Dr. J. H. Manning, Salary	500.00
Clerical Assistance	400.00
Auditing	31.50
Miscellaneous and Emergency:	
Office Supplies	\$24.50
Telephone and Telegraph	19.92
Flowers	12.71
Resolution, Winston-Salem Journal	8.96
Intangible Tax	8.96
Postage	8.80
Total	2,065.35
North Carolina Medical Journal:	
Printing	\$ 1,553.31
Editor's Salary	400.00
Rent	100.00
Total	2,053.31
Total Disbursements	4,380.26

EXCESS OF RECEIPTS OVER DISBURSEMENTS—FOR THE PERIOD—(To Exhibit "B")	\$ 7,286.12
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Exhibit "B"

AVAILABILITY OF FUNDS—MAY 15, 1941

Unencumbered and Unappropriated Funds
Held January 1, 1941:

Checking Account—Citizens Bank and Trust Company, Roanoke Rapids, North Carolina	\$ 6,141.65
Certificate of Deposit No. 74	5,000.00
Savings Account—Bank of Halifax, Weldon, N. C.	2,500.00
	\$13,641.65

Add:

Excess of Actual Receipts Over Disbursements For the Period (Per Exhibit "A")	7,286.12
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Total Unencumbered and Unappropriated Funds Held May 15, 1941	\$20,927.77
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Balance—May 15, 1941—Composed of.

Checking Account—Citizens Bank and Trust Company, Roanoke Rapids, N. C. (Per Exhibit "C")	\$10,927.77
Certificate of Deposit No. 83	5,000.00
Savings Account—Bank of Halifax, Weldon, N. C.	5,000.00
Total	\$20,927.77

Exhibit "C"

RECONCILIATION OF FUNDS ON DEPOSIT WITH BANK
May 15, 1941Citizens Bank and Trust Company
Roanoke Rapids, N. C.

BALANCE—Per Bank Statement	\$10,995.77
Deduct—Outstanding Checks:	
Number Payee Amount	
506 J. A. Fleetwood	\$ 2.00
64 E. D. Apple	56.00
65 Cash (Stamps)	10.00
	68.00

BALANCE—Per Records of Treasurer (Per Exhibit "B")	\$10,927.77
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CERTIFICATE OF DEPOSIT

Number	Date	Maturity Date	Interest Rate	Amount
83	May 14, 1941	May 14, 1942	2½%	\$5,000.00

President Haywood: Thank you, Dr. Peery. Is there any discussion of Dr. Peery's report?

Question: How much money have we on hand, Dr. Peery?

Dr. Peery: Dr. Manning can tell you that.

Secretary-Treasurer Manning: We have somewhat over \$20,926.77 as of May 15, but there are eight months to go. The fiscal year ends December 31.

Dr. W. D. James: Mr. President, may I submit the report of the Board of Medical Examiners now?

President Haywood: We shall be glad to hear it, Dr. James.

Dr. James:

Report of the Board of Medical Examiners
of North Carolina

The Board of Medical Examiners of North Carolina met in Raleigh, June 17, 1940, at the Sir Walter Hotel. Fifty-six students took the first two years' examinations. Sixty-five were granted license by taking the last two years' or all four years' examinations. Those taking the last two years' examinations had previously received credit by examination for the first two years.

Forty-three physicians were granted license by endorsement of credentials.

All physicians granted license to practice medicine in North Carolina, either by examination or endorsement of credentials, were graduates of Grade A medical schools.

All members of the Board were present: Lewis W. Elias, M.D., Asheville, examiner in Practice of Medicine, Pediatrics, and Hygiene; K. B. Pace, M.D., Greenville, examiner in Pharmacology, Materia Medica, and Therapeutics; Frank A. Sharpe, M.D., Greensboro, examiner in Gynecology and Obstetrics; W. M. Coppridge, M.D., Durham, examiner in Pathology and Bacteriology; J. Street Brewer, M.D., Roseboro, examiner in Anatomy, Embryology, and Histology; Lester A. Crowell, Jr., M.D., Lincolnton, examiner in Physiology and Chemistry; W. D. James, M.D., Hamlet, examiner in Surgery.

The Board of Medical Examiners of North Carolina met in Durham, December 10, 1940. At this meeting thirty-eight physicians were granted license by endorsement of credentials. All physicians appearing before the Board for license to practice medicine in North Carolina were graduates of Grade A medical schools.

President Haywood: Dr. James, we thank you

for your report. It will be entered in the minutes of this meeting.

If there is no other business to come up now the House of Delegates will adjourn until 8 o'clock tonight, when it will meet in this same room.

... Thereupon the House of Delegates adjourned, at 5 o'clock p. m.

MONDAY EVENING SESSION

May 19, 1941

The House of Delegates held its evening session in the ladies' card room of the Carolina Hotel, with the President, Dr. Hubert Benbury Haywood presiding.

President Haywood: Will the house of Delegates please come to order.

Let us proceed with the report of the Hospital Committee, of which Dr. J. B. Whittington is Chairman. Dr. Whittington, will you give us your report?

Dr. Whittington:

Report of Hospital Committee

In 1939 after being appointed Chairman of the Hospital Committee of the State Medical Society, I wrote Dr. T. W. M. Long requesting that he give me some idea as to the function of such a committee, not being able to find a report prior to that time. Dr. Long wrote me stating that the Committee on Hospitals was supposed to keep in touch with the activities of the North Carolina Hospital Association and bring to the attention of the Medical Society any matters which might be for the good of the Medical Society or for the mutual good of both Associations. With that object in view, we wish to make the following report:

The hospitals of the state have always been workshops for the surgeon, but in recent years they have widened their scope of influence until, at the present time, it is very safe to estimate that 50 per cent of medical practice is done in the hospital. Not only the surgeon is using the hospital, but the internist, the urologist, the obstetrician, and the pediatrician. As an example: Last year in Winston-Salem 1800 babies were born. Over 1500 of that number were born in the hospitals of the city. With this in view, we merely wish to call to the attention of the Medical Society the close cooperation necessary with hospital administrators in order to achieve the maximum results. We feel that since the hospital and the doctor are so intimately associated, and their problems are so much the same, it might be a wise idea to make room on our program each year for one paper on some phase of hospital administration.

The North Carolina Hospital Association, during the past year, has been very active especially in the legislative field. During the past two sessions of the North Carolina Legislature, the North Carolina Hospital Association has sponsored a bill known as the Highway Accident Bill, whereby a small fee of fifty cents would be added to each automobile license tag sold and this fund set up to pay the hospitals of the state three dollars per day as part payment on automobile accident cases. This bill has been defeated at both sessions of the Legislature. It was introduced in the Senate this last January by our departed member, Dr. T. W. M. Long, and was passed by the Senate, but in the House it was defeated by four votes.

Another piece of legislation that affects the hospitals very much, and which was passed, relieved the hospitals of ad valorem taxes. This will save the hospitals of the state considerable money.

During the year, the Hospital Association has had several conferences with the North Carolina

Industrial Commission. They have reached an agreement that some members hope will prove satisfactory, but we have our fingers crossed as to the ultimate outcome. It is the opinion of the majority of the members of the North Carolina Hospital Association that someone, or some organized body will be compelled to make a test case before the courts of the state outlining the exact authority of the Industrial Commission before any peaceable solution can be had. It is our information that both doctors and hospitals in Virginia and South Carolina are satisfied with the rulings and treatment received at the hands of the Virginia and South Carolina Industrial Commissions, but that Virginia and South Carolina physicians have expressed the desire not to treat industrial patients from North Carolina due to the fact that their bills are always mutilated.

We feel that it is to the advantage of the hospitals and of the Medical Society to call to your attention the shortage of nurses and technicians due to two things: (1) the demand of the Army for nurses and other personnel to staff the Army Hospitals, and (2) the increased expansion of our hospitals, which is due to people's being more hospital minded and also to the fact that their economic conditions have been better. These two factors have produced, at the present time, a shortage in hospital personnel which is rather acute. We are bringing this to your attention in order that you may co-operate more fully with the hospitals in your requests for service, both in the nursing and laboratory fields.

We feel that this report would not be complete without calling your attention to the activities of your child, the North Carolina Hospital Saving Association, during the past year. We can only repeat the figures given in the May issue of the North Carolina Medical Journal which are as follows:

Hospital Saving Association

On April 15 the record of the Hospital Saving Association of North Carolina was as follows:

Net membership to date.....	145,880
Net increase during 3½ months of	
1941	8,119
Members admitted to date.....	34,589
Members admitted during 3½	
months of 1941	3,672
Number of admissions to date.....	46,560
Admissions during 3½ months of	
1941	5,777
Days used to date	367,121
Days used during 3½ months of	
1941	46,717
Hospital bills paid to date.....	\$1,500,000.49
Bills paid during 3½ months of	
1941	184,957.22

In our judgment the North Carolina Hospital Saving Association is one of the bridges that will transport us over the chasm of state medicine. If some solution can be evolved for the medical and surgical care of this great group of middle class patients, by which they may voluntarily subscribe as they have in the hospitalization group, we believe with the help of that bridge, governmental regimentation can be avoided.

J. B. Whittington, Chairman
Robert Thrift Ferguson.

President Haywood: Is there any discussion of Dr. Whittington's report?

If there is no discussion, without objection the report will be entered on the minutes of this meeting.

The next committee to report is that on Industrial Health, of which Dr. H. F. Easom is Chairman.

... No report.

President Haywood: We will pass on to the next matter of business, which is the report of the Committee on Legislation, Dr. Donnell B. Cobb, Chairman.

Dr. Cobb:

Report of the Legislative Committee

Your Legislative Committee's activities have been concerned chiefly with the past Legislature. In our discussions and efforts, we have been most fortunate in having the cooperation of Senator Blythe, Chairman of the Senate Health Committee, and of Dr. Johnson, Chairman of the House Health Committee. The various Executive officers of our Society, too, have given your Committee much appreciated and needed help. To our President, Dr. Hubert Haywood, we are particularly indebted for his guiding suggestions, his wise advice and his continued help. Dr. Carl V. Reynolds, Secretary of our State Board of Health, has also favored us with his valuable assistance and seasoned judgment. In the untimely death of our late Secretary-Treasurer and State Senator, Dr. T. W. M. Long, occurring just at the beginning of the Legislature, your Committee lost the main support upon which it had been leaning. Had we had his continued help, we are sure that much more could have been accomplished.

For your consideration and information we submit the following report.

Bills Passed:

H-257—To amend Chapter 314 of the Public Laws of 1939 with respect to physical examinations for marriage license. This bill was sponsored by the State Health Department and amends the statute requiring physical examination before marriage to provide that certificate of physical examination and Wassermann tests will be good for 30 days instead of two weeks as previously.

H-549—This bill was sponsored by the North Carolina Radiological Society and includes in the definition of the Practice of Medicine the Practice of Radiology. It does not prevent the practice of radiology by dentists, osteopaths, chiropractors, or chiroprodists, but prevents the establishment of various x-ray laboratories by technicians, and the taking and reading of plates and giving opinions by these men.

—Dr. Reynolds, Secretary of the State Board of Health, and Senator Blythe, Chairman of the Senate Health Committee, were interested in the passage of a bill to regulate tourist homes, boarding houses, and other places furnishing food for sale to the public. It was felt that the numerous tourist camps were not sufficiently supervised from a health standpoint. It was also brought out that many of the boarding houses located at the various colleges and universities in the state were not receiving the proper supervision. Our legal counsel conferred with Dr. Reynolds and Mr. Booker in drafting such a bill and this was passed and ratified during the closing days of the Legislature.

Two other bills were passed that are of interest to the medical profession. These are:

S-37—This bill authorizes the issuance of bonds in the sum of \$600,000.00 to establish a sanatorium for the treatment of tuberculosis.

H-470—This bill makes claim for drugs and other medical necessities of the preferred class in payment of decedents' debts.

Bills Not Passed:

H-372—The Optometry bill. The optometrists sought to change the present law so that an application for aid to the needy blind "shall be accompanied by a certificate signed by a reputable physician, licensed to practice medicine in the State of North Carolina, or an optometrist, licensed to practice optometry in the State of North Carolina and who is actively engaged in the treatment of diseases of the human eye." It was felt that the optometrists were seeking further legislative recognition and full legal implication that they be allowed to engage in the treatment of diseases of the human eye. Although such a law would authorize the State Blind Commission to use the services of optometrists, it was authoritatively learned that the optometrists did not expect the Commission to call upon them, nor were they desirous of giving their services to the Blind Commission. The Blind Commission was very much opposed to such a law. The failure of this bill to pass is due primarily to the zeal and untiring efforts of Dr. Milton R. Gibson, as President of the North Carolina Eye, Ear, Nose and Throat Society, and to Dr. Roma Cheek, Executive Secretary of the Blind Commission, and to Dr. Frank Smith, Medical Consultant of this Organization.

H-797—To regulate the sale of drugs and appliances for the prevention of venereal diseases. This received an unfavorable report of the House Health Committee.

H-365—To place drugs containing barbituric acid products within the division of narcotic drugs. This bill was reported unfavorably by the House Health Committee as in past years.

S-67—The so-called Crash Tax bill would create a highway accident hospitalization fund by adding 50 cents to the fee for license tags. Although this bill was primarily sponsored by the North Carolina Hospital Association, your Committee and its legal counsel gave it support.

Bills Considered:

Consideration was given to the bill previously passed requiring Wassermann tests for expectant mothers, it being thought by some that failure to comply with this law placed the entire responsibility upon the physician. Upon study by our legal advisor, it was found that the Attorney General had previously ruled that this act placed the responsibility for such examination entirely upon the woman and not upon the doctor. The penalty for violation of \$25.00 or imprisonment of 30 days is for "any knowing and willing violation of this act", which of course, applies to physicians or any others who may be involved, (to require them to make the reports provided by the act). Of course, the physician's responsibility is clear where the patient requests such a test. It is conceivable that if a child is born infected with the disease and the mother claimed that she had requested the physician to take a Wassermann test, then a serious question would arise for the attending physician.

The Section on Pediatrics and the North Carolina Pediatric Society were interested in the introduction of three bills:

1. That any person who shall place lye or any similar substance in any place so that a child could get it would be guilty of a misdemeanor.

and punishable by a fine not exceeding \$25.00. This very commendable move was made in an effort to prevent the large number of cases of ulceration, scarring and stricture of the esophagus occurring yearly from children swallowing lye. This matter was given much thought and a bill was prepared and presented to Dr. Johnson, Chairman of the House Health Committee for study and introduction. During further consideration, this matter was taken up by our legal counsel with the State Chemist, Mr. Queen, and with the Secretary of the State Pharmaceutical Association, Mr. Smith. It was found upon study that the subject matter is already well covered by the present Pharmacy Law. (This law requires that every person who sells or disposes of any of the poisons therein named, must first inquire the purpose for which a poison is purchased, and second, whether or not the purchaser understands its dangers, and then the seller must caution the purchaser about the dangers of the poison and keep a complete record of all sales.) It was therefore concluded that it would not be worth while to enact any other legislation upon the subject, but to use the present law in a wide-spread campaign to regulate the sale of caustic poisons and to require all the sellers of lye and other poisons to comply with the Pharmacy Act. It seems likely that a committee from our Society, working in conjunction with the Pharmaceutical Association, could accomplish much good along this line. It is suggested that the Section on Pediatrics take this under advisement.

2. An act to require all cafes in our state which receive the rating of "A" by the State Board of Health to purchase, use and sell only pasteurized milk. This matter was discussed by your Committee with Senator Blythe, Chairman of the Senate Health Committee, Dr. Johnson, Chairman of the House Health Committee and Dr. Reynolds, Secretary of the State Board of Health. It was the consensus of opinion that this control of milk is already vested in the Health Department and that any additional restrictions must be carried out by them.

3. A bill which would regulate the apportionment of teachers according to attendance. This matter was taken up with Senator Blythe and Representative Johnson, respective Chairmen of the Senate and House Health Committees, and with Mr. Clyde Erwin, State Superintendent of Public Instruction. It was Mr. Erwin's opinion that such a bill would not meet favorably in this past General Assembly and that if passed, it would result in the shifting of a large number of teachers from schools where attendance is poorest and, as a result, would cause even more crowded conditions in those places where attendance is now good.

Your Committee was informed that the Trustees of the Caswell Training School were considering presenting to the Legislature a bill changing that portion of the Charter of the Caswell Training School so that the Superintendent of this school need not be a physician. No such bill was introduced.

It was suggested by the Health Department that provision be made to furnish free diphtheria toxoid for all children. The suggestion was also made that tetanus toxoid should be combined with the diphtheria toxoid. It was felt, however, that since there is some fear on the part of the public of any hypodermic administration for the prevention of

tetanus, that to include this with the diphtheria toxoid would jeopardize a successful diphtheria campaign. On further conferences with our President, Dr. Haywood, and with Dr. Reynolds, it seemed inadvisable for the Department of Health to make any further requests to the Legislature for further appropriation for free diphtheria toxoid at this time.

Our former President, Dr. William Allan, as many of you know, has for some time been most interested in legislation that would bring the various mental institutions in the state under one head. Dr. Allan very kindly came to Raleigh to meet with the Legislative Committee and other interested persons and had a personal conference with Governor Broughton. Dr. Allan feels "that nothing fundamental in the way of the prevention of nervous and mental diseases will ever be done in this state until the responsibility for doing something is returned to the medical profession and taken out of the hands of the Department of Charities and Corrections." It is his feeling that the care of the mentally sick could be under the State Board of Health. The opinion has been advanced, however, that in order to accomplish this, it would be necessary to change our State Constitution. It has been suggested by Dr. Allan that a Bureau of Genetics be established in the State Health Department. We understand that Governor Broughton gave this idea his approval. Our late secretary, Dr. Long, was interested in having placed in the budget an item of \$5,000.00 a year to make a start on such a Genetics Bureau. His untimely death caused such plans to collapse for the time being.

The Naturopath bill did not again appear at the 1941 Legislature, but some activity on the part of the proponents of such a measure was observed.

Your committee has been kept informed by the A.M.A. Bureau of Legal Medicine and Legislature of the various activities in Washington. It seems that nothing of importance that relates strictly to the medical profession has been passed. It will bear repetition that the Wagner Act is still up for consideration, but no hearings on the bill have been scheduled as yet.

There has been a revival of activity in connection with the Murray bill, S-783, relating, among other things, to the deferment of the selection of medical students, interns and residents. The bill has been brought up for discussion. No definite conclusions have been reached. In the meantime, Senator Murray has appealed to the several state associations and to the American Medical Association for support of the bill.

In conclusion your committee wishes to express its appreciation to the various officers of our Society and of the State Board of Health, and to the individual physicians of the state for their valuable assistance. In every instance where help and advice were needed, it was freely given. It is this complete cooperation that has made it possible for your Legislative Committee to accomplish anything.

Respectfully submitted,

William B. Dewar
George L. Carrington
Donnell B. Cobb, Chairman

President Haywood: Dr. Cobb, we are deeply indebted to you for your report and for the thorough and businesslike manner in which the affairs of your committee were conducted. Without objection, the report will be received and entered upon the minutes. Is there any discussion?

Dr. Rachel Davis (Lenoir): I think we ought to commend Dr. Cobb for the very effective work his committee did.

There are two things on which I wish to comment. One is the premariage examination. It is making a Gretna Green of South Carolina for

couples from eastern North Carolina. I wish that this matter could be taken up with South Carolina to see if something could not be done towards getting better enforcement of this premarital examination law.

I do think the matter of prohibiting the over-the-counter sale of barbiturates to lay persons who have become acquainted with them and ask for them is something that ought to come up repeatedly before the Legislature, and that ultimately these drugs should become prescription drugs only.

Dr. James H. McNeill: Our county society, the Wilkes-Alleghany Society, has had some difficulty with a chiropractor in our town who has been prescribing medication. We were on the point of prosecuting him and were hopeful of slapping him in jail, with perhaps a heavy fine to pay. But we found that practicing medicine in North Carolina without a license is not a felony but a misdemeanor, with only a small fine. So we thought we would do this fellow more good by advertising him than we would help ourselves. Our society is very anxious to get some change in the Medical Practice Act so that there will be a heavy fine and possibly imprisonment for people who practice medicine without being qualified for it. I want to bring that strongly to the attention of Dr. Cobb and his committee. If they could influence the Legislature to make such a change it will be appreciated, I think, by the people of the whole state, certainly by the people of Alleghany and Wilkes Counties.

Dr. G. W. Mitchell: I do not know just how we should do it, but I think it would be nice to let Senator Blythe know that we appreciate his cooperation with us and his support.

President Haywood: Senator Blythe was a tower of strength to us. I do not know just exactly how we could handle that unless we let Dr. Cobb express to Dr. Blythe our sincere appreciation and thanks. I have talked with Senator Blythe since, and he told me how much he enjoyed working with Dr. Cobb and his committee.

Next is the report of the Committee on the Medical Society Foundation, of which Dr. L. C. Skinner is Chairman, the other members being Dr. R. L. Pittman, Dr. John Q. Myers, and Dr. Ross S. McElwee. Is anyone here to make the report?

... No report.

President Haywood: The next matter of business is the report of the Committee on Mental Hygiene.

... No report.

President Haywood: We will go on to the next report, which is that on Postgraduate Medical Study, Dr. William H. Smith, Chairman. Dr. Smith, will you give the report?

Dr. Smith:

Report of the Committee on Postgraduate Education

Postgraduate education for the medical profession in North Carolina has progressed rather successfully and your committee believes that North Carolina is well in the forefront of the states in this work.

Educational facilities have been given by the three medical schools in the state and by the State Board of Health. The educational facilities given by each one are as follows: Duke Medical School held their annual symposium last October, at which time the subjects treated were blood and metabolic diseases. This symposium was attended by several hundred physicians and included doctors not only from North Carolina but a good many of the Southern states. Duke is continuing their offer of postgraduate internship. With the cooperation of the State Board of Health and the School of Public Health of the

University of North Carolina, Duke Medical School is offering to the physicians of the state an intensive course for five days in obstetrics and pediatrics. This has met with much approval as shown by the fact that 112 applications for these courses have been received up to May 8 and this fills the quota well into September. These courses are limited to six men at a time.

The Duke Medical School with the cooperation of the University of North Carolina Medical School and Wake Forest Medical School gave a postgraduate course in October for colored physicians at Lincoln Hospital in Durham.

The University of North Carolina Medical School and the Extension Division gave two courses, one in Raleigh and one in Wilson this spring. These courses ran for six weeks with weekly lectures and dinner. This has met with a good many favorable comments, as it gives the physicians a chance for social contact as well as for acquiring knowledge. These two courses were attended by about two hundred physicians. The University of North Carolina Public Health School in cooperation with Duke University and the State Board of Health has held clinics in various parts of the state on Child and Maternal Welfare. The Public Health School of the University is regularly giving courses to medical graduates on public health work at Chapel Hill with special attention to the diagnosis and treatment of syphilis.

The State Board of Health has been very active in promoting and sponsoring postgraduate education, and in addition to the activities mentioned in conjunction with the University of North Carolina and the Duke Medical School it promoted two postgraduate courses in the state last June. One was at Roaring Gap and one at Wrightsville. These courses were on obstetrics and pediatrics. These courses have been well received and the State Board of Health has had many requests to repeat them.

All of the mentioned facilities were given to the physicians of North Carolina without charge, with the exception of the Extension courses. For these a charge of \$15.00 for the whole course is made.

As you can see from the enumeration of these postgraduate activities, physicians of North Carolina both white and colored have open to them a good many chances to receive postgraduate instruction. The profession shows an eagerness for instruction by attending these courses.

Your committee was represented by Dr. R. L. Linebach at a meeting of the Association of State Postgraduate Committees meeting in New York last summer. At this meeting the idea was stressed very plainly that all postgraduate work should be under the supervision of the State Medical Society. This is the opinion of the Committee on Education of the American Medical Association.

Except for a minor part this State Society does not participate in postgraduate education. The work being done so far by the above named agencies makes it hard for the committee to recommend any change.

The three medical schools are represented by having each of the Deans on the Committee for Postgraduate Instructions, and the State Board of Health should be represented by having one of its officers on this Postgraduate Committee.

These different agencies are very progressive in offering the profession of the state these advantages and the profession sincerely thanks the different agencies.

Respectfully submitted,

R. L. Linebach, M.D.
W. C. Davison, M.D.
C. C. Carpenter, M.D.
W. R. Berryhill, M.D.
Wm. H. Smith, M.D.

President Haywood: I feel that the State Medical Society owes Dr. Smith a debt of gratitude for the interest and the inspiration he has given to furthering the cause of postgraduate medical work in North Carolina. I happen to know that he has been very active and very much interested and has inspired zeal when it looked as if the work was beginning to lag. I think we should give him a vote of thanks.

Is there any discussion on Dr. Smith's report? Dr. Davison, could you tell us something about the postgraduate medical work at Duke?

Dr. Willburt C. Davison, Duke University: For the last ten years we have carried in our catalogs an invitation to the doctors of the state to come and take postgraduate work at Duke. Very few men—only seven in all—have taken advantage of it in the ten years. If you care to take this opportunity, you can get a room on the campus and board for about ten dollars a week. We shall be delighted to have anyone come and spend a week or two with us.

The postgraduate course next October will be on defense medicine, and will also take up psychiatry. We shall be very glad to have any of you come and take advantage of that.

Dr. Smith: Dr. Cooper, of the State Board of Health, has been very active, as I said in my report. He is present here, and I think the House of Delegates could well hear from him. The State Board of Health is doing some excellent work.

President Haywood: Dr. Cooper, we shall be delighted to have you speak to us. We all know what you have done and are always glad to hear from you.

Dr. G. M. Cooper, State Board of Health: Dr. Smith sent me last week a copy of his report, asking for any suggestions or any criticisms. I made one criticism, and he asked me to present it here. The criticism is this. Dr. Smith has been entirely too modest about the part played by the State Medical Society in the postgraduate extension work. Since 1916 this work has been carried on. To this day, in any meeting I attend in Washington or any other place, in which pediatrics or obstetrics is discussed, some man from West Virginia or Michigan or some other place gets up and mentions in his paper the North Carolina postgraduate medical work, which was sponsored by the State Medical Society.

The State Medical Society, of course, has not carried on the program. It could not. It has not had the money and has not had the machinery. A great deal of money and a great deal of organization work are required. The State Board of Health and the University of North Carolina and Duke University have had the organization and the machinery.

I wish to make two points. In the first place, the State Medical Society should be proud of its postgraduate medical work. In the second place, it should emphasize its postgraduate committee's work more than it does. In my judgment it is the most important committee you have—although I do not mean to disparage any other committee—because the practice of medicine is changing so rapidly. A man can not afford to hop off to New York or Chicago for two weeks or a month every year. If he goes to New York in October and spends two weeks, then by May what he has learned is outmoded. Therefore the only practical method is to have short courses and bring them to the profession in their homes.

If you recall, we offered to the doctors in 1935 a postgraduate course in obstetrics, which many men told me has been the most valuable course they

ever took. Last year, with the cooperation of Dr. Davison and others, we put on a short course at Roaring Gap and at Reidsville on pediatrics and obstetrics. It should be extended to cover every phase of the physician's work.

We, in all our work, have first outlined the details of every postgraduate effort to the officials of the State Medical Society, for their criticism and their suggestions and their endorsement before it started.

Dr. Smith and his entire committee have done a noble job, not only this year but in the past years, and I hope you will extend and continue to support the postgraduate work, as you have done. I thank you.

Dr. C. F. Strosnider, Goldsboro: The postgraduate work has been an educational feature since the beginning. It has been only the foundation for what is to come. I feel the day is not far distant when these schools are going to bring the postgraduate work into the counties.

Dr. Smith: I suggest that the House of Delegates ask the Nominating Committee to follow the practice of putting the deans of the three medical schools in North Carolina on this Committee on Postgraduate Medical Study, and also a representative from the State Board of Health.

President Haywood: The President will appoint that committee, Dr. Smith; the Nominating Committee does not do it. Your suggestion will be entered on the minutes, so that it will be brought to Dr. Griffith's attention.

Is there any further discussion? If not, we will go on to the next item of business, which is the report of the Committee on Printing. Our late Secretary, Dr. Long, was chairman, and the other members are Dr. Wingate M. Johnson and Dr. B. C. Willis. I do not see them here, so we will go on to the report of the Committee on Public Relations, Dr. D. W. Holt, Chairman, and Dr. McCain. Dr. Holt, will you make the report?

Dr. Holt:

Report of Committee on Public Relations

Mr. President and Members of the House of Delegates:

So far as we have been able to ascertain, there has not been a great amount of legislation passed affecting the medical profession since our 1940 meeting, which has not been reported by the Committee on Legislation.

There has been an amendment made to the law relative to the health certificate for marriage license so that now the laboratory examinations are good for a period of thirty days, whereas heretofore, it was for only two weeks.

Also there has been an amendment made to the law relative to servants in the home, requiring the servant to have a physical examination when he or she gets a job. Failure to comply with this law carries with it a fine of fifty dollars. Furthermore the local health department is required to publish this law.

In order to comply with requirements of the Federal Social Security Board, a law creating a merit system of rating all employees of public health and welfare organizations, both state and local, was adopted by the last Legislature of North Carolina. Under this law the Governor of the state appoints a merit system council of five members, none of whom can be a member of any of these organizations. This council, in turn, appoints a merit system supervisor who has charge of giving merit examinations and selecting the personnel for employment in all health and welfare agencies of the state, except the State Health Officer and his confidential

secretary, and the head of the state welfare department and local welfare superintendents, who are selected in accordance with the state law governing this matter.

An important point we wish to stress, and one which has been called to your attention before is the importance of each county society's having a Public Relations Committee. We feel sure that these committees can do much to bring about closer and more harmonious relationship between the press and our profession, and in so doing present the medical viewpoint to the laity. As we have called to your attention before, with so many interests and paid propagandists doing all in their power to convert our nation to socialized medicine, it is all the more important that our profession have authorized spokesmen in the various counties. There is a great opportunity for local Public Relations Committees to educate the people through the press of the pitfalls and dangers coincident with socialized medicine. We, the members of the medical profession, know that it has ruined the profession of medicine in every country which has adopted it. What we want to do now is to educate the people to that fact.

In a recent address delivered at a meeting of the Ninth District Medical Society in Statesville, our president, Dr. Hubert B. Haywood, outlined most clearly a number of medical problems in North Carolina. These facts, as enumerated by Dr. Haywood, are most interesting and should be thoroughly realized and attacked by all the members of our profession in an effort to find a prompt and proper solution of the problems confronting us. A great many of these problems can be handled much more effectively, and much sooner, if they are properly presented to the lay public through the medium of the press and other means at our disposal. Herein lies a great opportunity for members of public relations committees in the various county societies to render a most beneficial service in educating the public, in the proper way, along vital health lines and medical problems.

D. W. Holt, Chairman
I. H. Manning
P. P. McCain.

President Haywood: Is there any discussion of Dr. Holt's report? If not, it will be accepted as read and entered on the minutes of this meeting.

The next report is that of the Committee on Social Security, of which Dr. Forrest M. Houser, of Cherryville, is Chairman.

... No report.

President Haywood: If there is no report from the Committee on Social Security we will proceed to that of the Committee on Socialized Medicine, of which Dr. James W. Vernon is Chairman. Dr. Roscoe D. McMillan and Dr. Hamilton W. McKay are the other members.

Dr. Vernon:

Report of the Committee on Socialized Medicine

All of us are aware of the fact that we are living in uncertain and momentous times. There is political and social upheaval throughout the world. Many believe, and more fear that far reaching changes in the practice of medicine are at our door. The ever widening field of public health service, the demand for group insurance of various types and degree, the activity of the Federal Government recently in threatening to impose extensive State Medicine on the general population, the introduction of the Wagner Bill in Congress which may or may not be dead, the trial of the A. M. A. and others recently in Washington all have brought forcibly before us the fact that the medical profession is con-

fronting problems needing most careful and searching consideration.

Your committee throughout the year has given many hours of thoughtful reading and study to most of these problems. We have observed with surprise and apprehension the outcome of the A. M. A. trial, though its full meaning is very obscure as yet. We know of experiments in group insurance in a number of localities throughout the country. Commercial insurance companies are now writing surgical service and perhaps medical and obstetrical insurance in many industrial plants in the state. The Medical Service Association of Durham is offering a plan to be worked through separate units of county societies giving pro-rated payments toward the payment of fees and charges of hospitals, nurses, surgeons, and doctors. The child of this society, the Hospital Saving Association of North Carolina, Inc., at Chapel Hill, is considering the proposal of a plan to offer in addition to their hospitalization feature a surgical service coverage, and perhaps more in due time if the Society approves. We are told that many industries are asking for some type of surgical, medical, and obstetrical coverage that they may offer with approval of the medical profession to their employees. These problems have received considerable study by your committee and by others in this body.

Your committee, in its desire to secure a representative cross-section of the opinions of the members of this Society on the present trends toward socialized medicine and to get some guidance as to how the Society should deal with these problems now confronting the medical profession of the state, prepared twelve questions bearing on these problems and sent them out to one hundred representative members of the Society. We regretted not to send these questions to all members and especially regret that we could not have the opinions and good judgment of all. We selected the past Presidents, the Councillors, members of the Executive Committee, chairmen of all committees, members of the Board of Medical Examiners, the Deans of the medical schools, and others who have been active in the affairs of this Society.

We have received a most gratifying number of replies which we think is indicative of the deep interest in this subject. While these replies have been helpful they have not by any means fully clarified any of our problems. Many express lack of understanding; some are violently opposed to any change of the status quo; and many are convinced that the profession should do something while the time is ripe, so that we may have some influence or control over the changes that are now threatening the practice of medicine.

In view of these conflicting opinions and the uncertain state in which these problems are now resting, your committee has decided to make only a few suggestions for your consideration rather than definite recommendations:

1. We believe that these problems should receive further consideration by a committee, the members of which have been carefully selected, with instructions to organize for intensive study of the trend toward socialized medicine and the various types or proposals of health insurance or group insurance.
2. That this committee establish for itself an executive organization to carry on this study continuously and especially to assemble all available information.
3. That this Society is not at present in a position to approve any plan yet offered for insurance for professional services.
4. That we bear in mind at all times the far-reaching importance of preserving the doctor-patient relationship.

5. That in order to save our profession and its ideals we give our full support to organized medicine.

Respectfully submitted, for the committee,
Roscoe D. McMillan
Hamilton W. McKay
James W. Vernon, Chairman.

President Haywood: Dr. Vernon, we are obliged to you for that report on the status of socialized medicine in North Carolina. I shall be glad to hear some discussion, gentlemen. If there is no discussion the report will be accepted and entered on the minutes of this meeting.

Our next report will be that of the Hospital Saving Association, by Dr. I. H. Manning.

Dr. I. H. Manning: Mr. President and gentlemen, please understand that I am now speaking as President of the Hospital Saving Association and not as Acting Secretary-Treasurer of the State Medical Society. In the beginning, let me say that I was selected three years ago to serve on the Board of Trustees of the Hospital Saving Association. My term expires this year, and I shall be very glad to turn over the office to someone else. It has been a headache. Prior to this year I would not have made any suggestion for turning it over to anyone else, but now it is in good condition and another person can carry it on better than I can.

I will read the report, and I believe you will be convinced that this is a real business.

Report on the Hospital Saving Association

I am very glad to be able to report that the Hospital Saving Association is out of the red and has a comfortable, though still inadequate surplus. The record of its growth and present status may be seen at the exhibit in the scientific section. In brief it has paid the hospitals since the beginning something over one and a half million dollars and is now paying them at the rate of approximately \$600,000 a year. The membership approaches 150,000.

The trustees have thought it desirable to have this and similar service corporations brought under the supervision of the Insurance Commissioner. With the cooperation of the Hospital Care Association, the State Hospital Association of Tarboro, and Mr. Boney, the insurance commissioner, the General Assembly passed a special amendment to the insurance law securing this supervision and at the same time exempting the associations of certain burdensome requirements which might otherwise act as serious handicaps. The service corporations are now handling enough of the public money to justify legalized supervision.

At the last meeting, the board of trustees recommended the addition of surgical and obstetrical fees to the benefits to be offered to certain selected groups, and the charter of the Association has been amended to include such benefits with the approval of the insurance commissioner. The reason for this change in policy is found in the facts that there is a definite and increasing demand for such coverages by industrial groups in the state, and the commercial companies are meeting the demand and getting the business. Obviously if the Hospital Saving Association is to stay in the business it must meet the competition. I am, therefore, submitting the recommendation for your consideration and, I hope, approval.

For your information I have this situation to report. There are now ten or more commercial and service companies offering such coverages and doing business in North Carolina. Among them are such old line insurance companies as the Metropolitan, Aetna, Travelers, Prudential, National Casualty, etc., and the three North Carolina service companies, Gate City, Hospital Service and

the State Hospital Association of Tarboro. The larger old line companies are out for the big game. The Provident Life and Accident of Chattanooga has been doing a growing business in North Carolina for a number of years and is our most active competitor; it is out for any and all the business it can get.

The commercial companies are, of course, insurance companies, licensed to do business in the state, and are at liberty to write combination policies of group life, unemployment, professional service and hospitalization, or any two or more of them. The contracts are made between the industrial group and the company, and the benefits may include any that the industry wants and is willing to pay for. None of these companies are offering medical benefits. I am quite sure the doctors in North Carolina have had some experience with these companies and know as much about them as I do.

Perhaps I am not far afield in calling this "commercialized medicine." Like it or not, the profession has very little control over it and so far as I know there has been no organized protest. On the contrary the Hospital Saving Association has lost some of its business to them under the advice or approval of the local profession because of the surgical coverage offered. The contract is usually made between the commercial company and the industry without consulting the doctors. In a few instances the industry has consulted the local profession, the proposal has been refused and the proposition finally rejected. This does not happen often and obviously need not happen at all.

The proposal now offered for your consideration is obviously a voluntary, limited "socialized medicine," and is open to whatever objections there may be to any form of socialized medicine. In my judgment it is not so bad as commercialized medicine and is vastly better than state medicine. In fact, as the Hospital Saving Association is to a very large extent under the control of the profession and this Society, a desirable and perhaps fortunate alternative is offered. I have felt for some years that if the profession could find some reasonable solution of the problem of medical care for the medically indigent (and under present conditions it is a very large class in North Carolina) the two evils, state and commercialized medicine, would be defeated. I do not believe that state medicine is an issue at the moment, but commercialized medicine is definitely with us.

The pros and cons of socialized medicine have been debated from the high schools to the Senate of the United States ad nauseam. Recently a somewhat similar proposal to that now under consideration has been presented to some of the counties in the state. Aside from the familiar and somewhat didactic objections to the principles of socialized medicine, the more common objections are as follows:

1. The benefits do not include medical service, but are limited to surgery and obstetrics. The answer to this objection is that thus far medical service cannot be covered on any sound or practical basis. Full medical care is now being offered in certain states—e. g. Michigan, New York and others—, but in each of these the program is sponsored and underwritten by the profession. In each of the programs that I have been able to study, the premium rate is so high that it is prohibitive to the class of people for whom the program is intended. The rate is very close to \$5.00 a month, and I am quite sure it could not be sold to the textile industry in North Carolina. So far as I know no commercial company offers medical service to the low income groups, which is a strong argument that it cannot be done with any prospect

of a profit. Moreover, where the program provides an option as to the benefits, hospitalization and surgical benefits are preferred. As a matter of fact there is no public demand for medical coverage.

The Hospital Saving Association proposes to offer obstetrical fees. A large part of the obstetrical practice is still done in North Carolina by the general practitioner. The fee of \$25.00 is payable for the delivery, whether done in the home or the hospital.

I am quite willing to say that when a plan is developed by which medical services can be offered on a sound financial basis, the Hospital Saving Association will give it very careful consideration.

2. The objections raised by the surgeons concern the fee schedule and the possible abuse of the program by the well-to-do. The fee schedule proposed is open to inspection and criticism. Obviously the fee schedule is fixed by the premium rate, or vice versa. If the fees are high the premium rate must also be high, and if the latter is too high the medically indigent cannot afford to buy and the objective will be defeated. We have in the present schedule fixed the maximum surgical fee at \$75.00, and the rate accordingly. It seems to me a very reasonable fee for a class of people whose income is very close to the subsistence level.

The abuse of the privilege of membership in this Association is, as we have good reason to know, very difficult to control. However, we attempt to protect the surgeon by having the contract with member read that the payment of the surgical fee is towards the surgeon's fee. This means, of course, that the surgeon reserves the right to fix his fee. I hope, however, that this right will not be abused. My own thought and very strong feeling is that the fee schedule should be full-pay for members whose income is below a certain level. What this level should be I am willing to leave to a group of surgeons with the hope that due consideration will be given to the general economic conditions of this class of people.

It should be borne in mind that in any voluntary system the people can buy a membership and also cancel it. Cancellation is a very real problem, and is now about 11 per cent. I know of no better way to defeat this program than by making extra charges for services covered by the contract. The profession is not asked to underwrite the program, but it is asked to give it a sympathetic cooperation. We are trying to work out a program which will be beneficial to you as well as the people. I do not believe the profession will suffer economically from this venture in "socialized medicine."

I. H. MANNING, President.

President Haywood: Is there any discussion of Dr. Manning's report for the Hospital Saving Association?

Dr. Paul H. Ringer, Asheville: I should like to say a few words on Dr. Manning's report. I was brought into this hospital-saving thing ex officio, when I was president of the State Society, because the president of the Society is a member of the Board of Trustees of the Association. Quite to my surprise, I became tremendously interested. I have been a member of the Board of Trustees ever since and a member of the Executive Committee and have gotten quite a kick out of the thing. I have watched the growth of the organization from a very small membership to a membership of nearly 150,000.

There is one thing I want to say to the House of Delegates. Don't let Dr. Manning get away from this thing. He thinks, in his modesty, that somebody else can do it as well as he can. I know from my experience of the last five years that nobody else can do it as well as he. I know that it

would be a tremendous blow if Dr. Manning should step out; I am afraid it would be a death blow.

The question of surgical coverage has come up. Being a medical man, I thought: "Well, if you have surgical coverage, why not have medical coverage?" But I have suffered a change of heart. There is no actuarial basis on which to found medical coverage. It is different from surgical coverage. A great many medical cases do not need hospitalization, whereas practically all surgical cases I think are hospital cases. If we should add medical coverage we, being human, might hospitalize many cases which could get along very well without hospitalization. I believe that the surgical coverage will be a very satisfactory addition to the services that the Hospital Saving Association proposes to give.

Dr. James H. McNeill: This insurance business is evidently coming to us, and if we can guide it we should do so. I can not quite agree with Dr. Ringer in what he says about the medical coverage. We know that some pneumonia patients get well in two days under the present treatment, while others take from six to eight weeks. I see no reason why medical coverage should not be added on a fee-per-visit basis. If the medical man can be taken care of on a per-diem basis or a per-visit basis, it would seem to me fair to add his services.

Dr. Julian A. Moore, Asheville: Mr. President, insurance medicine is here, whether we like it or not, and I think the thing for us to decide is whether the medical profession is going to leave it in the hands of the commercial company (and commercial companies are not going to write this insurance without a profit) or whether we are going to support a plan by which most of the money paid for surgical services will go for the purpose for which it is intended. I think it is estimated conservatively that most commercial companies get around 40 per cent of the premium dollar for commissions and profits.

I think we could approve such an insurance scheme as the Hospital Saving Association is proposing, but I should like to offer the suggestion that before this insurance scheme is approved a committee of surgeons representative of surgeons throughout the state draw up an equitable schedule of fees.

Dr. A. H. London, Jr. (Durham-Orange): I should like to report on an operation that has been going on in the Durham-Orange Counties Medical Society for the last year or two. It might throw some light on the present situation. Whether we call this socialized medicine or not, it is with us, and the best thing for us to do is to have it so we can control it rather than have some commercial company telling us what we can do.

In Durham the Erwin Cotton Mills Company, a large textile organization, had their employees insured for hospital care. The Provident Company came in and talked the employees into demanding some form of surgical coverage added to their policies. Fortunately, the management of the Erwin Mills read the policy, and considered it unfair to the local physicians; they asked the local profession to consider the possibility of some type of benefit to those people and to suggest to them what could be done.

As a result of that, the Durham-Orange Medical Society appointed a committee to study this question of medical and surgical benefits. The first thing to be considered was that these commercial companies offer surgical benefits. Could a non-profit corporation be formed and offer surgical benefits? We thought probably it could and could meet the surgical benefits of the commercial companies. The second question that arose was, if these commercial companies operate and take 25 per cent of the total, pay the overhead and still pay the surgeon's

fee, could not the men who do the yeoman's work do the same thing and receive some benefit from it?

After going carefully into the situation the committee recommended to the Society the following proposition: First, that an association could be formed giving surgical benefits. No general men or obstetricians, but surgeons—general surgeons, nose and throat men, etc.—drew up this schedule of fees, which they thought would be equitable. In drawing up these fees two things were kept in mind. The first was that if they kept a set schedule of fees there was a possibility that that schedule might become standard for the rest of the community. So it was written that this amount was an allowance toward the cost of the surgical operation, and the fee was left to the discretion of the physician.

That schedule of fees was adopted. It was the schedule that was recommended by the surgeons, and it is similar to the thing that Dr. Manning is proposing.

Obstetrics is a great burden to the man who is doing general medicine, particularly among this low-income group. So an allowance of \$25 for an obstetrical case, regardless of whether it was in the home or the hospital, was made.

There is an increasing amount of medical disease treated in the hospital, and rightly so. For that reason it becomes a burden on those of us who are charged with the care of the so-called service patients. We felt that some allowance should be made toward the cost of medical care. That brings up a problem that has been mentioned before. If a man has a patient at home from whom he knows he will get nothing, and the patient has this coverage, it is a temptation to bring him into the hospital. We met that problem by limiting the coverage to eight days, so that there is no temptation to run it over eight days, and by setting the fee at \$2 a day—\$1 less than the average charge for a house call.

This policy is worded "towards the cost of medical care", and when it is sold to these people that clause is emphasized; and, believe it or not, when these people buy it they understand that what they have in the insurance is an allowance toward the cost of medical care.

This whole thing is under the control of the county medical society. Before the insurance can be sold in any county the county medical society has to approve it. Each county approves these fees. If they do not like them they can change them; it is entirely up to each individual county. In addition, before this company can sell a corporation it has to get permission from the local medical society to canvass that corporation.

During the first quarter 1,800 members joined. The medical, obstetrical, and consultation fees were paid 100 per cent; the surgical fees were paid 54.52 per cent. The reason for that was that in the first quarter there was no selection of cases. The next quarter the surgical fees were paid 100 per cent. In the third quarter the surgical fees were paid 81 per cent. One reason for that was that a flu epidemic came on and there were a lot of pneumonia cases. Another reason was that the date of payment was changed.

Eliminating the chronic surgical cases, it is felt that probably very quickly 100 per cent can be paid the surgeons. If at any time a surplus is accumulated it goes back and pays up those low percentages.

We feel that this is an equitable sort of thing, and it is something that the local medical society can control. We do not recommend this particular company, but we do feel that the general plan has operated very successfully. A canvass of the medical society recently shows that the men who have

done the work for this group and received their pay have been very well satisfied. The medical men say that the \$16 they got for the care of pneumonia cases did not pay them in full, but it represents \$16 they would not have gotten at all. The obstetricians say the same thing about their fees, and so do the surgeons.

The charges for this insurance are twenty cents a week for a single man and twenty-five cents a week for a family. For the latter sum a man can insure himself and his wife and fifteen children, if he happens to have that many. That is a higher tax on the single man, but it is in keeping with the income tax and other methods of taxation.

Dr. G. W. Mitchell: The first thing we ought to decide is whether the North Carolina Medical Society is going to uphold the dignity of the medical profession or enter into the commercial insurance business. If we are not going into the commercial insurance business we have no business being in the insurance business at all. I think you will lower the prestige of the Medical Society if you undertake any insurance schemes.

The ethics of the American Medical Association, Section 4, says that solicitation of patients by individual physicians is unprofessional. Consequently, when any organization goes out and solicits patients on an insurance basis, it has violated the very first principle of the ethics of the American Medical Association.

Next consider the section, "Limits of Gratuitous Service": "Poverty of the patient and the mutual obligation of the physician should command the gratuitous service of the physician, but endowed institutions. . . have no claim upon the physician for unremunerated services." Under "Contracts", Section 2, it says: "It is unethical for a physician to dispose of his services. . . and lowers the dignity of the profession."

It does not seem to me that the North Carolina Medical Society should violate the ethics of the American Medical Association by starting in a commercial business, even though it is by sponsoring something which has proved valuable to the hospitals, as the Hospital Saving Association has. I have no kick on that, because hospitals are commercial institutions. But, in a county with a hospital in which only one group of physicians practice, when you sell a policy to a person for care in that hospital, you deprive him of his choice of physicians.

In the Durham company, they had 1,600 cases last year. There are 405 doctors in the eleven counties covered—that is, in organized medicine. There were 135 doctors that participated in the Durham affair. Each of those doctors got \$14.11 for each case treated in the association.

I am willing, if necessary, to start on a gratuity basis. It does not matter much for those of us who are old. But what about the boys coming out of school who can not get one-half of the fees they are entitled to? These fees are practically half of what the Industrial Commission allows. Don't you know the Industrial Commission will say: "If your insurance company pays \$50 for a fractured femur, why should we pay \$100?"

There is no way in the world to keep any type of person from getting in under these schemes.

Dr. George L. Carrington: The multiplicity of plans suggested for taking care of the situation shows both the necessity of some such plan and the uncertainty of it. It is evident that the perfect plan has not been evolved. So I should like to move you, sir, that this House of Delegates endorse the work of the North Carolina Hospital Saving Association and that we authorize that Association, so far as this Medical Society is concerned, to pro-

ceed experimentally to the collection of any fees that they feel justified in their policies.

... This motion was seconded.

Dr. C. F. Strosnider: I should like to offer an amendment to provide that we endorse the work of the Hospital Saving Association and that we appoint a committee of seven to consider the problem and give a report. This is a serious matter. We did not go into the Hospital Saving Association at a jump. I think this thing should be studied carefully. As I see the Saving Association in my community, the large majority of people for whom it was intended are not using it.

President Haywood: Do you accept the amendment, Dr. Carrington?

Dr. Carrington: Yes, sir, I accept it very gladly.

Dr. Manning: May I say a word? If we are going to do the thing we have to do it now. If we take a year to study it we shall be out of the picture by that time. The type of business that we want—these industrial groups—will be taken by someone else. We have a number of groups right now refusing to take hospital coverage because they want surgical coverage too. If we do not give it to them the Provident will get them. I am very glad to have a committee appointed to study the proposition, but they should not take too long to report. We have put it off just as long as we can. There is a definite demand for it. Those who demand it are going to get it, and if we do not give it to them someone else will. That is the true situation. There is no demand for medical service, because everybody who has studied the question knows it can not be done on any sound actuarial basis. There is no way in the world that you can predict what is going to happen in a medical case, but you can predict something about surgical cases. If we could find a way to take care of the medical man no one in the world would like it better than I, because I realize it is not fair to take care of one group and not another; however, as we go into this type of insurance and get experience then we can broaden it. I am glad to have a committee appointed but I do say for heaven's sake don't take forever to study the problem.

Dr. Philip B. Davis (Guilford): I wonder if we could have the privilege of voting on Dr. Carrington's motion without amendment. We put this thing up in Guilford, and we like it. These industrial plans are not offering much. Under this plan the fellow's entire family is covered, and the money is paid directly to the physician. Under the industrial plans it is paid to the employee. I should like to bring out those two points, and I think we should leave it up to Dr. Manning to evolve a plan so that he can meet competition.

Dr. Carrington: I did not understand that the amendment provided for a committee to report next year. I thought it was a purely advisory committee of seven. Had I understood otherwise I would not have accepted the amendment.

Dr. J. Street Brewer: Is it necessary to have the approval of the Medical Society to go ahead, Dr. Manning, or are you just seeking its blessing?

Dr. Manning: It is not necessary, no.

Dr. Brewer: In other words, the Hospital Saving Association can go ahead, whether or not this proposition is approved?

Dr. Manning: I would not like to say that. Under our charter I suppose we could.

Dr. Brewer: Why not let the Hospital Saving Association go ahead and then next year seek the approval of this body if the plan has been successful? You have heard the report of Dr. London,

which is very good, and heard the report from the Durham plan, which has been in operation a year. Then next year we can have the report of the Hospital Saving Association as to what their surgical coverage plan has done for a year, and the report of Dr. Vernon's committee, and decide on the question.

I think the medical profession is face to face with a fact. You may call it socialized medicine or whatever you please. We have had for years forms of socialized medicine. When we go into the hospital and treat the ward patients for nothing, that is a form of socialized medicine. The point is, are we going to have this socialization of medicine under the control of the medical societies themselves or are we going to have a form of what I call Federal medicine under the control of the Federal Government. The plan proposed by Dr. Manning and the plan operated in Durham are more or less under the control of the medical men. You can put it in your pipe and smoke it that we shall have them. They are already here. These things are in the experimental stage. I think we should give Dr. Manning permission to go ahead and try his plan for a year and see how it works out. If it does not work out, try some other plan. We are going to have some socialization of medicine, either socialization of our own making and under our own control, or federalized medicine.

Dr. Booker E. Rhudy, Greensboro: May I ask Dr. Manning whether this proposition he has before the House is limited to a certain income group or whether it will be extended to the public in general.

Dr. Manning: The question of limiting the hospital service to the low-income group was very carefully considered by a very large committee representing the Hospital Association and the Medical Society; and it was decided that, although we were not trying to get into the upper-income group, if we went into a factory and did not let the boss come in but asked the workers to come in, there would be a suspicion that something was rotten in Denmark. We decided, therefore, that we would not put any limitation on it; however, we do not go after the upper income group at all. If the boss of the mill says he will not have insurance unless you take them all (and that is what most of them say) we let them come in. But most of these people take a private room, and the hospital gets pretty close to its regular fees out of them. If this goes through the surgeon will get his fee. The patient does not escape anything if he is able to pay. I have felt and thought that it should be done as it is done in England, where the benefits are limited to people with incomes under \$1,500. Practically all the hospitals in England are charity hospitals. If a person goes into a hospital in England no charge is made for hospital service or medical service. If he looks as if he is able to pay he is politely asked for a contribution. If you have this certificate of membership you can get in and you will not be asked anything.

Dr. Carrington: Mr. President, I withdraw my acceptance of the amendment.

... Dr. Mitchell moved to table the matter. Motion lost.

President Haywood: Dr. Carrington, will you state your motion again?

Dr. Carrington: I move that the House of Delegates endorse the work of the North Carolina Hospital Saving Association and that we authorize that Association, so far as this Medical Society is concerned, to proceed experimentally to the collection of any fees that they feel justified in their policies.

Dr. Davis: I should like to suggest to Dr. Manning that we give him a free hand and let him go

ahead and use his best judgment and that we back him up.

Dr. Smith: I should like to concur with Dr. Davis. Dr. Manning has one child, and it is getting along pretty well.

Dr. London: Dr. Carrington, will you accept as an amendment to your motion a provision requiring the approval of the president of this Society?

Dr. Carrington: I do not think that is germane to the question, and I decline it.

Dr. Pace: I wish to offer a substitute motion. We know that Dr. Manning would like to have some approval from the Society. These commercial concerns are coming in and have already nearly ruined him. If we put off action they will complete that ruin. This is the only thing that has been done by the Medical Society since I have known it to have medical affairs handled by medical men. I move that Dr. Manning be authorized to proceed at once—tonight, if he wants to—to add surgical fees up to \$75, obstetrical fees up to \$25, and that a committee of seven be appointed to consult with him later.

... This substitute motion was seconded by Dr. Davis and Dr. Brewer, and on being put to vote was adopted.

Dr. Davis: Since we have a plan in several counties almost identical to this, I should like to make a motion that the Society endorse that plan.

... This motion was seconded.

Dr. Brewer: I was just about to make a similar motion. The Medical Service Association is in operation in a number of counties. I have in my pocket letters from the superintendents and surgeons-in-chief of both hospitals in Fayetteville, where they have been doing a considerable amount of work for these folks, and they give the plan their endorsement one hundred per cent.

... The motion was put to vote and carried.

President Haywood: We will proceed with our business, and the next report is that of the Committee on Tuberculosis, of which Dr. S. M. Bittinger is Chairman.

... No report.

Committee on Syphilis Control—Dr. J. C. Knox—no report.

Board of Examiners for Nurses—no report.

President Haywood: That completes the reports, except that Dr. Davis has something unfinished on the Advisory Committee to the Industrial Commission, I believe.

Dr. R. B. Davis: We have gotten together and have drawn up a resolution which we should like to have this body adopt. I offer the following resolution and move its adoption:

"Whereas, a discussion in the House of Delegates of the Medical Society of the State of North Carolina shows that there is a widespread dissatisfaction among the doctors of North Carolina over the manner in which bills rendered for compensation work are being adjusted; and

"Whereas, repeated protests to the present medical adjuster from all types of practitioners have brought no satisfactory results; therefore

"BE IT RESOLVED, that the President of the Medical Society of the State of North Carolina appoint a committee of five physicians to confer with the Honorable J. M. Broughton, Governor of North Carolina, in order to express to him the sentiments of the medical profession of North Carolina and request that another medical adjuster be appointed who will be more suitable to the medical profession; and

"BE IT FURTHER RESOLVED, that this committee consist of the following doctors: Dr. W. D. James, Hamlet; Dr. J. A. Elliott, Charlotte; Dr. Philip B. Davis, High Point; Dr. C. C. Carpenter, Winston-Salem; and Dr. C. F. Strosnider, Goldsboro."

... The motion to adopt the resolution received several seconds. There was no discussion, and the motion was carried without a dissenting vote.

President Haywood: The invitations for the next meeting of the State Medical Society will be handed to the Nominating Committee.

If there is no further business to come up at this time, the meeting is adjourned.

... Thereupon the House of Delegates adjourned, at 11:00 p. m.

WEDNESDAY AFTERNOON SESSION

May 21, 1941

The House of Delegates convened for its final session in the west parlor of the Carolina Hotel, with Dr. Hubert Benbury Haywood, the President, presiding.

President Haywood: Will the House of Delegates come to order, please.

We will first take up unfinished business, under which comes the report of the Finance Committee. Dr. Peery, the Chairman, is not here. Dr. Manning, will you enlighten us on the subject?

Secretary-Treasurer Manning: Mr. President, Dr. Peery in his report for the Finance Committee the other day omitted to mention anything about a budget. The budget is made out for the year and we have gone five months of this year using last year's budget. Practically all the money we have paid out is unauthorized. I do not know how you are going to handle that, when the fiscal year ends in December and the budget is made out in May. This is the suggested budget as made out and approved by two members of the Committee.

Proposed Budget 1941

RECEIPTS:

Current and Back Dues.....	\$ 12,300.00
Advertising	4,000.00
Interest	250.00

EXPENDITURES: (All

Offices Except Secretary)

Stationery	\$ 100.00
Councilors' Trav. Expenses	250.00
President's Trav. Expenses	400.00
Executive Committee	500.00
Other Committees	600.00
State Meeting Reporting..	600.00
A. M. A. Delegates.....	300.00
Guest Speaker (Dr. Lahey)	100.00

Total\$ 2,850.00 \$ 2,850.00

SECRETARY'S OFFICE:

Salary	\$ 2,400.00
Salary Dr. Long by Ex. Com.	600.00
Clerical Assistance	1,200.00
Stationery	100.00
Rent	300.00
Traveling Expenses	600.00
Auditing	65.00
Miscellaneous and Emergency (Postage, Telephone, etc.)	900.00

Total\$ 6,165.00 \$ 6,165.00

NORTH CAROLINA
MEDICAL JOURNAL:

Editor's Salary	\$ 1,200.00	
Assistant Editor's Salary..	900.00	
Rent	300.00	
Printing the Journal.....	5,000.00	
Total	\$ 7,400.00	7,400.00
Total		\$ 16,415.00

Dr. Mitchell: I move that the House of Delegates approve the budget as read.

... This motion was seconded and on being put to vote was carried.

President Haywood: The budget is approved.

Is there further business to come up?

Secretary-Treasurer Manning: I had a telegram from Dr. John W. Williams, who has been President of the North Carolina Public Health Association, thanking the Society for its cooperation in this year's meeting. The cooperation consisted in giving them the whole of Monday for their exercises, especially the ball room for their dance that night. He was very appreciative of the courtesy that we showed him.

President Haywood: Is there any new business to come before the House?

Dr. P. P. McCain, Sanatorium: I should like to offer the following resolution and move its adoption:

"Whereas the Hospital Saving Association was initiated by Dr. Isaac H. Manning and largely through his efforts has developed into a large and useful institution; and

"Whereas Dr. Manning has given the Association wholeheartedly of his time, energy, and ability without financial reward; and

"Whereas the added feature of surgical and obstetrical insurance will greatly increase the administrative demands upon him; therefore

"BE IT RESOLVED that the House of Delegates of the Medical Society of the State of North Carolina respectfully urge the trustees of the Hospital Saving Association to take the necessary steps to make Dr. Manning Medical Director of the Association, at a salary commensurate with the responsibility entailed."

President Haywood: Do I hear a second?

... The motion to adopt the resolution received several seconds and upon being put to the question was carried.

President Haywood: The motion has been carried and will be so entered on the minutes of this meeting.

Dr. Reynolds, I believe you wanted to bring up the matter of some extension of time for the meeting of the Public Health Association. Will you state to this meeting exactly what you want in regard to that? It can be referred later to the Executive Committee.

Dr. Carl V. Reynolds, Secretary, State Board of Health: Mr. President, the public health personnel of North Carolina, including the public health officers, nurses, and engineers, has grown to such an extent that it requires more than one day for its annual meeting. The North Carolina Public Health Association, as I understand, in a resolution is making the request of this Society, as a child of this Society, that you give us the privilege of meeting on Monday (which is, of course, previous to your meeting) and on Tuesday, setting up to Tuesday the date for the first meeting of your House of Delegates. We hope that you will grant that request.

The law requires, as you all know, that there be

a Conjoint Session of the State Board of Health with the State Society on the second day of the annual session of the Society, at noon, as we had it today.

It has been suggested that the health workers might meet on the day following our State Medical Society meeting. If they were to do that, it would require the doctors (about one hundred of them) who are members of this Society and connected with the State Board of Health to remain at the place of meeting about five days. If they come first and meet with the sanitarians and nurses on the day previous to your first session they can then meet on the next day. To my mind that would be more beneficial to the State Society and decidedly more beneficial to the health departments. To be perfectly frank, it has been agitated that the Public Health Association have a different time for its meeting and possibly a different meeting place. Personally, I feel that we can not afford to divorce the two organizations. I think that they are interdependent and interlocked and that the success of one depends upon the success of the other and that we should keep that spirit of cooperation and fellowship. The only way in which we can do it, in my opinion, is to meet at the same time and in the same place.

President Haywood: Is there any discussion of Dr. Reynolds' ideas in regard to this matter?

Dr. G. W. Mitchell, Wilson: Mr. President, I think Dr. Reynolds has a good idea, but there are two other things you have to take into consideration. If you were to pass upon his request now, the matter would have to lie over until the next meeting, because an amendment to the By-laws has to lie over. Another thing: if there were brought together all the public-health crowd that was present this last time there is not in North Carolina a hotel big enough to take care of the whole crowd. It looks to me as though Dr. Reynolds would like to follow the latter suggestion and have the meeting after ours, since the Conjoint Session is on the last day, anyhow. I believe it would be better to have a committee to consider the thing and see if a satisfactory solution can be worked out.

Secretary Manning: The Constitution and By-laws, in connection with the meeting of the House of Delegates, simply say that the first session of the House of Delegates shall be held at eight p. m. (that has been amended to read two p. m.) on the day preceding the first general meeting of the Society, at which time as much as possible of the business of the House of Delegates shall be transacted. It does not say Monday or any other day. The custom has been to have it on Monday, but the By-laws do not specify the day of meeting.

I quite agree that the Public Health Association might just as well meet after the Society meeting as before.

President Haywood: Is there any further discussion? If not, the Chair will entertain a motion for the disposition of this matter. What does the House of Delegates wish to do?

A Member: I move you, sir, that the request of the Public Health Association be referred to the Executive Committee and that the Committee, with Dr. Reynolds, work out a solution that will be satisfactory both to the Public Health Association and to the Society.

... This motion was seconded and, on being put to vote, was adopted.

President Haywood: Is there further business to come up at this time?

Capt. J. W. Roy Norton, M.D., Fort Bragg: Gentlemen, I spoke to Dr. Haywood about this matter a

few minutes ago. As this is the last opportunity to bring it up I should like to put it before you. It is something that I think will be of importance to us during the coming year.

A large number of draftees who are inducted by the local boards are being turned back at the camps. I think it is a matter of great interest to the physicians of the state, certainly to the public health group, to follow up those men who are turned back and find out why they are rejected and prepare them for useful services for whatever purpose they may be called upon. No one knows what is ahead of us, but certainly it is important to make these men completely effective workers, whether in military service or industry or agriculture. My suggestion is that the House of Delegates take this matter into consideration and appoint a committee to work out a program, taking up the work from the standpoint of the doctors of the state (and of the dentists, because many of those rejected we know have dental defects). As I say, I come to you not in any official capacity but in the capacity of a citizen of the state.

President Haywood: Dr. Davison, can you tell us what has been projected along that line?

Dr. Wilhurl C. Davison, Duke University: The NYA has set up several camps in this country to take these rejected men and see what can be done to put them in good condition. One such camp is to be in Durham; it will be started about June 15. These camps will take men from 21 to 25 years of age on a voluntary basis and see what can be done to put them in good, sound health. The British have had a similar plan and have made a high percentage of men available for service. I believe if this plan works out other camps will be set up. I think Dr. Norton's idea is a highly important one and that if the community can begin some work like this and put it on a voluntary basis it will be very valuable.

President Haywood: Is there any further discussion?

Dr. Marion C. Palmer (Polk): I should like to see that work decentralized. In every locality in the state facilities are adequate to rehabilitate these people, and I should like to see it done.

President Haywood: Dr. Norton, is it your idea that we should take some action upon this now?

Captain Norton: My idea was for the State Medical Society, through its House of Delegates, to take official notice of this matter and possibly have a committee to study it and make recommendations.

President-Elect F. Webb Griffith: I think, Mr. President, that this matter might be handled through the Committee on Medical Preparedness, of which I was a member this year but shall not be a member next year.

President Haywood: Is there any further discussion on this subject? If not, we will proceed to the report of the Nominating Committee. I believe Dr. Ivey is the Chairman. Dr. Ivey.

Dr. Ivey:

Report of Nominating Committee

Mr. President and Members of the House of Delegates:

The Nominating Committee, composed of Doctors McElwee, Edwards, Bonner, Elliott, Shaw, Patterson, McCutcheon, Brewer, Ivey, and Carter, met in Room 211 at 5:30 p. m., May 19, 1942.

Dr. Ivey, temporary Chairman appointed by the President, was made permanent Chairman of the Committee.

Dr. T. L. Carter was made Secretary.

After giving the matter considerable thought and debate, the Committee agreed in making recommendations for the election of:

President-Elect—Dr. Donnell B. Cobb, Goldsboro

First Vice-President—Dr. Thos. DeL. Sparrow, Charlotte

Second Vice-President—Dr. T. L. Carter, Gatesville

Secretary-Treasurer — Dr. R. D. McMillan, Red Springs

Delegates to the American Medical Association, 1942 meeting:

Dr. W. T. Rainey, Fayetteville

Dr. Ross S. McElwee, Statesville (2 years)

Dr. W. C. Davison, Durham (3 years)

Alternates, American Medical Association:

Dr. C. C. Carpenter, Winston-Salem

Dr. I. H. Manning, Chapel Hill

Dr. Charles Armstrong, Salisbury

Delegates to Medical Society of Virginia, 1941 meeting:

Dr. D. W. Holt, Greensboro

Dr. Robert E. Smith, Mount Airy

Dr. John C. Tayloe, Washington

Dr. W. G. Sniter, Weldon

Delegates to South Carolina Medical Association, 1942 meeting:

Dr. Yates Faison, Charlotte

Dr. W. D. James, Hamlet

Dr. E. S. Bulluck, Wilmington

Place of next meeting: Charlotte.

President Haywood: Thank you, Dr. Ivey. Is there any discussion of the report?

Dr. Spoon of Alamance: May I ask if the election of the Secretary-Treasurer is for the unexpired term of Dr. Long or for the regular three-year term?

Dr. Ivey: It is for the unexpired term.

... It was moved that the report of the Nominating Committee be accepted, which motion was seconded and carried.

President Haywood: I am sure we shall be glad to have a few remarks from our new officers. I see Dr. Donnell Cobb in the audience. Dr. Cobb, will you not come forward and say a few words?

Dr. Donnell B. Cobb: Mr. President and gentlemen, I am very much overwhelmed by this honor and deeply grateful to you. I feel that in this time of national unrest and uncertainty we, as doctors, must remain well organized in the state in order to carry on our national program, so far as medical defense is concerned. I appreciate deeply the honor that you do me and the confidence you place in me and I want to do the best I can. I am going to expect and am sure I shall get your collective and individual support. I thank you from the bottom of my heart.

President Haywood: Is there any further business to come before the House of Delegates? If not, I declare this meeting adjourned sine die.

... Thereupon the House of Delegates adjourned, at three-fifteen o'clock p. m.

GENERAL SESSIONS

FIRST GENERAL SESSION

Tuesday Morning, May 20, 1941

The first general meeting of the Eighty-Eighth Annual Session of the Medical Society of the State of North Carolina convened at 9:30 a. m. on Tuesday, May 20, 1941, in the ballroom of the Hotel Carolina, Pinehurst, with the Secretary-Treasurer, Dr. I. H. Manning, of Chapel Hill, presiding.

* * * *

Secretary-Treasurer Manning: The Eighty-Eighth Annual Session of the Medical Society of the State of North Carolina will come to order, and at this time we shall have an invocation by the Reverend Thaddeus A. Cheatham, of Pinehurst.

... The invocation was given by the Reverend Mr. Cheatham.

Secretary-Treasurer Manning: There are just a few announcements I want to make. The first is about a letter I have received from the Honorable Lawson A. Moyer, United States Civil Service Commissioner. He says the Government is faced with a serious situation in securing physicians for the National Defense Program. He sends quite a number of blanks for applications for the positions of senior medical officer, medical officer, and associate medical officer in the Public Health Service, the Food and Drug Administration, the Veterans Administration, the Civil Aeronautics Authority, and the Indian Service, in the hope that some of the men attending this meeting may be interested in submitting their applications for such positions. The blanks may be secured at the registration desk.

... Dr. Manning then made some announcements about features of the program.

Secretary-Treasurer Manning: It is my very great pleasure at this time to bring to you Dr. Hubert Benbury Haywood, President of the Medical Society of the State of North Carolina, who will now make the President's Annual Address.

President Haywood: Mr. Chairman, ladies, and gentlemen, I have chosen for my topic "Medical Problems in North Carolina". I have given this subject, of course, considerable thought and study during this last year, and the thoughts that I bring to you are ones that have been most prominent in my mind during the year.

... President Haywood then read his address, which was published in the June issue of the North Carolina Medical Journal.

Secretary-Treasurer Manning: I ask Dr. F. Webb Griffith, the incoming president, to present to President Haywood the jewel given by the Society.

Dr. F. Webb Griffith, President-Elect: Mr. Chairman and fellow members: Recently I was talking to a lady from Raleigh, and she said there might be better doctors in North Carolina than Dr. Haywood but there certainly was no doctor more beloved. That could be said just as truly by the Society, because certainly there is no one of our members who is more admired and more beloved by the rest of the membership than is Dr. Haywood. In his relations to his colleagues and to his patients and in his civic duties he represents the very highest in medicine.

Hubert, it gives me peculiar pleasure to give you this slight token of esteem from your colleagues and to wish you many, many more years of usefulness.

President Haywood: Dr. Griffith, I thank you for your kind words of praise.

The North Carolina Medical Society occupies an important place in the life of our state. As an organization we fill a need which no other organization can supply. Our strength lies in our unity. We plumb the depths of human life, from extreme sorrow to great happiness. Our unity has given us a secure position in society and an enviable one. It is ours to preserve, and it is a priceless heritage and birthright to pass on to our children, that they too may cherish it. To turn back the dark image of death to renewed life is almost to have creative power. To serve as an officer of the Medical Society of the State of North Carolina, which does its best to preserve this ideal, is a great honor. I am proud of the North Carolina State Medical Society, proud of the State of North Carolina, and proud of being a North Carolinian. I thank you for the great opportunity of service which has been extended to me during this past year.

Gentlemen, we have today the great privilege of listening to Dr. Frank H. Lahey, of Boston. Dr. Lahey is a surgeon, a man of national and worldwide recognition in his field of work. He is the head of the Lahey Clinic, in Boston, is President-Elect of the American Medical Association, and is a man endowed by nature with many gifts. We could have no greater pleasure or greater honor than having him with us today. I present Dr. Lahey.

... Dr. Lahey then addressed the Society on the subject, "Developments in Medicine, Economic and Scientific".

President Haywood: Dr. Lahey, we are indeed grateful to you for your coming to us this morning and for this inspiring and interesting address. You have given us much food for thought.

The next number on our program is the report of the Committee on the Award of the Moore County Medical Society Medal, for the best paper presented at the 1940 meeting of the State Medical Society. Our Secretary, Dr. Manning, will make the report and present the medal.

Dr. I. H. Manning, Chapel Hill, Chairman: As Chairman of the Committee on Award of the Moore County Medical Society Medal, I wish to announce that the award has been given by the Committee to Dr. C. R. Monroe for his paper on "Thoracoplasty and Apicolysis" read at the last meeting of the Society. Will Dr. Monroe please come forward.

President Haywood: Dr. Monroe, in the name of the North Carolina Medical Society, it is my pleasure to present the Moore County award for the excellent work and the excellent presentation before the North Carolina Medical Society.

Dr. C. R. Monroe, Pinehurst: Dr. Manning, without the guidance and help of Dr. McCain and Dr. Thomas and Dr. Gray the paper on "Thoracoplasty and Apicolysis" would not have appeared. In behalf of those gentlemen, I accept this award.

President Haywood: The next item on the program is the report of the Obituary Committee, of which Dr. J. B. Cranmer is Chairman.

Dr. Ben J. Lawrence, Raleigh: Mr. Chairman and Members of the North Carolina State Medical Society: Each year when we come back here, we are forced, according to the plan of the Great Creator, to recognize that which causes us grief because a varying number of our loved ones have crossed the river and are resting under the shade of the trees. While this sadness is mitigated by the growing

number of new faces among our ranks, nevertheless in the soul of each one of us there still lurks that personal grief because of the physical absence of our members who have crossed the silver sea.

In the absence of the Chairman, Dr. Cranmer, the President asked me to read the roll of our honored dead, and while I read this, I ask you to listen to their names with a deep and genuine and sympathetic understanding.

. . . Dr. Lawrence read the names of those who have passed away, as follows:

Dr. Claude O. Abernathy, (Honorary Fellow)	Raleigh
Dr. H. N. Abernathy, (Honorary Fellow)	Charlotte
Dr. J. L. Adams	Asheville
Dr. W. C. Ashworth	Greensboro
Dr. A. C. Banner	Greensboro
Dr. Harvey P. Barrett	Charlotte
Dr. John T. J. Battle, (Honorary Fellow)	Greensboro
Dr. B. W. Burt, (Honorary Fellow)	Holly Springs
Dr. J. W. Campbell	Gastonia
Dr. Ransom Lee Carr	Rose Hill
Dr. Eugene R. Cocke	Asheville
Dr. Charles O. DeLaney	Winston-Salem
Dr. Amos C. Duncan	Forest City
Dr. J. D. Edwards, (Honorary Fellow)	Siler City
Dr. Albert Houck, (Honorary Fellow)	Chilburg, Va.
Dr. Norman N. Johnson, (Honorary Fellow)	Durham
Dr. C. C. Joyner	Farmville
Dr. A. E. Knoefel, Sr.	Black Mountain
Dr. G. W. Kutscher	Asheville
Dr. H. G. Lassiter	Weldon
Dr. James McQ. Ledbetter, (Honorary Fellow)	Rockingham
Dr. T. W. M. Long, (Honorary Fellow)	Roanoke Rapids
Dr. Chas. E. Moore, (Honorary Fellow) ..	Wilson
Dr. J. P. Munroe, (Honorary Fellow) ..	Charlotte
Dr. G. E. Parker, (Honorary Fellow) ..	Benson
Dr. Claude T. Poole	St. Pauls
Dr. Geo. W. Pressly, (Honorary Fellow)	Charlotte
Dr. W. Turner Ray	Charlotte
Dr. George P. Reid, (Honorary Fellow)	Forest City
Dr. E. Eugene Robinson	Kannapolis
Dr. J. C. Rodman, (Honorary Fellow)	Washington
Dr. Jas. Rufus Rogers, (Honorary Fellow)	Raleigh
Dr. Charles Judson Sawyer, (Honorary Fellow)	Windsor
Dr. W. W. Sawyer, (Honorary Fellow)	Elizabeth City
Dr. Cloyce R. Tew	Raleigh
Dr. Geo. D. Vick, (Honorary Fellow) ..	Selma
Dr. B. G. Webb, (Honorary Fellow) ..	Andrews
Dr. Geo. L. Wimberly	Rocky Mount
Dr. Claude B. Williams (Honorary Fellow)	Elizabeth City
Dr. D. R. Wolff	Greensboro

Dr. Lawrence: Now, according to a custom adopted some years ago, we will ask that you stand for just a moment in reverence to these dead.

. . . The audience stood in silence.

President Haywood: Next we shall have a paper from the Section on Ophthalmology and Otolaryngology, "Virus Diseases Affecting the Eye and

Adnexa", by Dr. W. Banks Anderson, of Duke University.

. . . Dr. Anderson presented his prepared paper.

President Haywood: We thank you, Dr. Anderson.

We next have a paper by Dr. T. M. Watson, of Greenville, on "Appendicitis in Small Children", from the Section on Pediatrics.

. . . Dr. Watson read his paper.

President Haywood: Gentlemen, the nicest event in the meeting today awaits us. The North Carolina Medical Society would not be a real Society if we didn't have Mrs. McCain to grace us on all occasions, and we are particularly pleased that she is to come to us this morning with a message on "The Woman's Auxiliary of the North Carolina Medical Society."

. . . Mrs. McCain read her paper.

President Haywood: Mrs. McCain, we are indeed grateful.

Dr. Manning, have you any announcements to make?

. . . Secretary-Treasurer Manning made some announcements about coming features of the program.

President Haywood: If there is nothing further, the meeting is now adjourned.

. . . Thereupon the meeting adjourned.

SECOND GENERAL SESSION

Wednesday, May 21, 1941

The second general session was called to order by Dr. H. B. Haywood, President of the Medical Society of the State of North Carolina, at 9 a. m.

President Haywood: The first paper on the program this morning is by Dr. James A. Watson, Director of Mental Hygiene, State Board of Charities and Public Welfare, of Raleigh, and the subject is: "The Medical Profession and the Problem of Mental Disorder."

. . . Dr. Watson read his prepared paper.

President Haywood: The next essay on the program is by Dr. Wilburt C. Davison, Dean of the Duke University School of Medicine, Durham, who will speak on "The First Ten Years of Duke University School of Medicine and Duke Hospital."

. . . Dr. Davison presented his paper.

President Haywood: Dr. Davison, we are deeply indebted to you for this presentation. It is of very vital interest to us in our state.

The next paper on the program is by Dr. J. W. Tankersley, of Greensboro, on "The Surgical Aspects of Splenic Disease", and comes from the Section on Surgery.

. . . Dr. Tankersley gave his prepared paper.

President Haywood: Thank you, Dr. Tankersley. We feel that you have made a real contribution to the subject of surgery and congratulate you on your splendid presentation.

Next on the program is the paper by Dr. W. T. Rainey, of Fayetteville, on "The Management of Congestive Heart Failure", which comes from the Section on Practice of Medicine.

. . . Dr. Rainey presented his paper.

President Haywood: Dr. Rainey, we wish to thank you not only for a scientific discussion but also for the practical aspect of this talk.

At this time I might make the announcement that the Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health will convene immediately following this General Session, at which time Dr. Reynolds will

render his report. At that time there is also the election of two members of the State Board of Health. The terms of Dr. Craig and Dr. Rainey expire this year.

Governor Broughton can not be here, and will not address the Conjoint Session, as announced.

I will ask Dr. D. W. Holt to preside while I attend a meeting of a Committee.

Vice-President Holt: The next paper on the program is by Dr. Elmus D. Peasley, on "The Physical Status of the Selective Service Draftees", which is from the Section on Public Health and Education.

... Dr. Peasley read his prepared paper.

Vice-President Holt: Thank you, Dr. Peasley. The next paper is by Dr. C. H. Manzy, of Winston-Salem, on "Caesarean Section, Its Incidence and Fetal Mortality in Some Cities in North Carolina".

... Dr. Manzy gave his prepared paper.

Vice-President Holt: Thank you, Dr. Manzy, for your fine paper. The next thing on the program is "An Explanation of the Pure Food, Drug and Cosmetic Act", which will be presented by Mr. W. Lee Moose, of Mount Pleasant.

... Mr. Moose then gave an explanation of the Pure Food, Drug and Cosmetic Act.

... The General Session was then declared adjourned.

CONJOINT SESSION

Wednesday, May 21, 1941

The Conjoint Session of the Medical Society of the State of North Carolina and the State Board of Health convened at 12:00 m., Dr. H. B. Haywood presiding.

Dr. Haywood: The session will please come to order. I will call Dr. Carl Reynolds and Dr. S. D. Craig, President of the State Board of Health, to come to the platform. We will hear from Dr. Craig.

Dr. S. D. Craig: Dr. Haywood, members of the North Carolina State Medical Society, and of the State Board of Health, and ladies:

We are disappointed, as Dr. Haywood has told you, that the Governor wired that he could not be with us today. North Carolina has been fortunate in its selection of Governors. They have been men of vision and have recognized that the health of our people is of first importance. Since I have been on the Board of Health we have always found the Governors interested and highly sympathetic with any constructive movement we had in mind.

The establishment of all of the camps of the state has thrown an unusual amount of work on our staff, but they have worked overtime and not complained of it. They have done a wonderful job.

Dr. Haywood: We will hear from Dr. Reynolds, Secretary of the State Board of Health.

... Dr. Reynolds presented his prepared report.

Dr. Craig: Before I turn this meeting over to Dr. Haywood, I want to announce that North Carolina has been signally honored by the recent election of Dr. Reynolds as Vice-President of the State, Territorial and Provincial Health Officers Association of America.

Dr. Haywood: Gentlemen, next is the election of the two members of the North Carolina State Board of Health. The terms of Dr. Douglas Craig of Winston-Salem and Dr. W. T. Rainey of Fayetteville have expired, and it is now in order to entertain nominations for these places on the State Board of Health.

Dr. Mitchell: I would like to nominate Dr. William T. Rainey, of Fayetteville.

Dr. J. B. Whittington: I have been opposed to the third term, but because Dr. S. D. Craig of Winston-Salem is an outstanding man in this work and is in complete sympathy with the health program, I wish to place his name in nomination for reelection.

Dr. Haywood: Are there any further nominations?

Dr. McCain: I would like to second the nomination of Dr. W. T. Rainey.

Dr. Wall: I would like to second the nomination of Dr. Craig.

... Upon motion, duly seconded and carried, the nominations were closed.

Dr. Haywood: If there is no objection, these gentlemen will be elected by the voice of the House, since there are two men and two positions. Do I hear a motion to that effect?

Dr. Carrington: I so move.

... This motion was seconded by Dr. McCain and duly carried.

Dr. Haywood: I declare Dr. W. T. Rainey and Dr. S. D. Craig reelected to the State Board of Health. Is there any other business?

Dr. Reynolds: I would like to express my appreciation to this body for reelecting Dr. Rainey and Dr. Craig. They have been very valuable sources of help to me and to the central administration in carrying out the program, but particularly is it necessary that we have men that are familiar with our policies at the present time to carry on this gigantic preparedness program.

Dr. Haywood: I want to make the announcement that the meeting of the House of Delegates is at 2:30 and the general session is at 5:00. If there is nothing further, the meeting will adjourn.

... The meeting thereupon adjourned.

THIRD GENERAL SESSION

Wednesday, May 21, 1941

... The last general session was held in the ballroom of the Hotel Carolina at 5:00 p. m.

President Haywood: The meeting will please come to order, and we will have the report of the House of Delegates. Dr. Manning, will you give us that report?

... Secretary-Treasurer Manning presented the report of the House of Delegates, which, on motion duly made, seconded, and voted upon, was adopted.

President Haywood: Is there any unfinished business which we should consider at this time? Is there any new business to come up?

If not, I ask our new president, Dr. F. Webb Griffith, to come to the platform.

Installation of Officers

It is my privilege to present to you your President, Dr. F. Webb Griffith. Dr. Griffith has been chairman of the Medical Preparedness Committee of our Society this year. It was a difficult assignment, and he has fulfilled all the duties and obligations of that office with faithfulness and exactitude. I know of the caliber of his work, because I have served on committees with him; and I am sure that with him as president of this organization we are going to have a great era of prosperity in our Society, of good will and good feeling, and that we shall attain heights we have never reached before.

It is my pleasure, Dr. Griffith, to turn over this gavel to you.

... Dr. Griffith gave his inaugural address which was published in the June issue of the *North Carolina Medical Journal*.

President F. Webb Griffith: I see Dr. Cobb, our President-Elect, here. We shall be glad to have a word from him.

Dr. Ivey, will you bring Dr. Cobb up here?

... Dr. Cobb was escorted to the platform by Dr. Ivey.

Dr. Donnell B. Cobb, President-Elect: Mr. President and gentlemen, I can do nothing more than repeat what I said before the House of Delegates this afternoon to let you know how very much I appreciate this honor that you have bestowed upon me and to tell you that I am conscious of the great responsibility it carries and that I shall do my level best to carry out your wishes and to promote the interests of the Society. I am going to expect and I know I shall have the support of the membership. I thank you very much.

President Griffith: Dr. McMillan is our newly elected secretary, and I am going to ask him to

say a word. Dr. Edwards, will you escort Dr. McMillan up here?

... Dr. McMillan was escorted to the front by Dr. Edwards.

Secretary-Treasurer R. D. McMillan: Mr. President and gentlemen, I am just going to make a long speech of three words! I thank you.

President Griffith: It has been customary in the past to read out the nominations for the various committees. Last year the by-laws were changed, and the President-Elect names all the committees. I have the list here, but I shall not bore you with it; I will turn it over to the Secretary, and those of you who are on committees will be notified. I am sure every one of you will give us, as you always have, your whole-hearted support.

Is there anything else to come before the meeting today? If not, we stand adjourned until next year.

... The Society then, at 5:25 p. m., adjourned sine die.

ALPHABETICAL LIST OF FELLOWS FOR 1941 WITH POSTOFFICE ADDRESSES

Name	Address	Name	Address	Name	Address
Honorary Members					
R. L. Payne, Jr., M.D.,	Norfolk, Va.	*Anderson, W. B., OALR	Durham	Barefoot, W. F., S.	Wilmington
Stuart McGuire, M.D.,	Richmond, Va.	Anderson, W. H., (Hon.)	PH	Barham, B. F.	Mayodan
Wm. Seaman Bainbridge, M.D.,	New York, N. Y.	*Andrew, J. M.	Lexington	*Barnes, H. E.	Hickory
William Sharpe, M.D.,	New York, N. Y.	*Andrew, L. A., Jr.,	U	*Barnes, J. T.	Asheboro
*James K. Hall, M.D.,	Richmond, Va.	Angel, Furman	Franklin	Barker, C. S.	New Bern
*Milton J. Rosenau, M.D.,	Chapel Hill, N. C.	Anthony, J. E.	Kings Mountain	Barkwell, J. H.	Weeksville
		Anthony, W. A., GP	Gastonia	Barnhardt, A. E.	Kannapolis
		*Apple, E. D.	Greensboro	*Barrett, J. M., GP	Greenville
		Archer, I. J., (Hon.),	Tb	Barrier, H. W.,	Psy
		*Arena, J. M., Pd	Durham	*Barron, A. A., (Hon.),	I
		*Armistead, D. B., I.	Greenville	*Basnight, T. G., (Hon.),	GP
		*Armstrong, C. W.	Salisbury	GP	Stokes
		Arnold, R. A.	Durham	*Bass, H. H., Jr.	Henderson
		Ashby, E. C., S.	Mount Airy	Bass, S. P., (Hon.),	GP
		Ashby, J. W., Psy	Raleigh	GP	Tarboro
		Ashe, J. R., Pd	Charlotte	Battle, M. W., Ob	Rocky Mount
		Ashford, C. H., GP	New Bern	*Battle, N. P., S.	Rocky Mount
		Ashworth, B. L., (Hon.)	Marion	Baxter, O. D.	Charlotte
		Austin, D. R.	Charlotte	*Beall, L. G., (Hon.),	NP
		Austin, F. D., Jr.	Charlotte	NP	Black Mountain
		*Avery, E. S., I.	Winston-Salem	*Beam, H. M.	Roxboro
		Aycock, E. B.	Greenville	Beam, R. S., OALR	Lumberton
		Aycock, F. M., GP	Princeton	*Beasley, E. B., GP	Fountain
		Aydlett, H. T., (Hon.),	GP	Beavers, J. W., GP	Kernersville
		GP	Greensboro	Beckwith, R. P.,	GP
		Aydlett, J. P., (Hon.)	Earl	GP	Roanoke Rapids
		*Ayers, J. S., GP	Clinton	Belcher, C. C.	Asheville
		Bacon, H. L.	Bryson City	Belk, G. W.	Gastonia
		*Bailey, C. W.,	OALR	Bell, A. E., (Hon.),	GP
		GP	Rocky Mount	GP	Mooresville
		Bailey, M. H.	Elizabeth City	*Bell, F. O.	Burlington
		*Baker, H. M., S.	Lumberton	*Bell, G. E., Ob, Pd	Wilson
		*Baker, L. D., Or	Durham	Bell, O. E.	Winton
		Baker, R. D., Path	Durham	Bell, S. A.	Cycle
		*Baker, T. W.	Charlotte	Bellamy, R. H.,	(Hon.), GP
		Bandy, W. G., GP	Lincolnton	(Hon.), GP	Wilmington
		Banner, C. W., (Hon.),	ALR	*Bellows, R. T.	Charlotte
		GP	Greensboro	Benbow, E. V., S.	Winston-Salem
		Barbour, E. G., GP	Morganton	Bender, J. J., GP	Red Springs
		Bardin, R. M., GP	Roanoke Rapids	*Bender, J. R., GP	Lexington
		*Barefoot, G. B.,	I, Path, R.	Bennett, E. C.	Elizabethtown
		I, Path, R.	Wilmington	Bennett, J. H., (Hon.),	GP
				GP	Wadesboro
				*Benson, N. O., U.	Lumberton
				Bentley, J. G., GP	Pores Knob

* Present at 1941 meeting.

Name	Address	Name	Address	Name	Address
Benton, G. R., Sr.	Fremont	*Brewton, W. A., S	Fort Jackson, S. C.	Carlton, R. L., (Hon.),	PH Winston-Salem
*Benton, W. J., Tb	Greensboro	Brian, Earl, I.	Raleigh	Carlyle, J. B.	Burlington
*Berryhill, W. R., I.	Chapel Hill	*Bridger, D. H.	Bladenboro	*Carmichael, T. W.,	GP Rowland
Best, D. E.	Goldsboro	*Bridges, D. T.	Lattimore	*Carpenter, C. C.,	Path Winston-Salem
Best, G. E., GP	Clinton	*Brinkley, H. M., GP	Durham	*Carr, E. M.	Asheville
Best, H. B., (Hon.), GP	Wilson	*Bristow, C. O., Pd	Rockingham	Carr, M. L., GP	La Grange
Bethune, A. C.	Raeford	Britt, C. S., Ob	Beaufort, S. C.	*Carrington, G. L., S	Burlington
Biggs, J. I.	Lumberton	*Britt, J. N., GP	Lumberton	Carrington, S. M., S	Oxford
Biggs, M. H., (Hon.),	S Rutherfordton	*Britt, T. C.	Mount Airy	Carroll, F. W., GP	Hookerton
Bigler, V. L., I.	Albemarle	*Brockmann, H. L., S	High Point	Carroll, R. C.	Durham
*Billings, G. M., ALR	Morganton	Brooks, E. B., I.	Winston-Salem	Carter, Bayard, ObG	Durham
Bitting, N. D., (Hon.), S	Durham	Brooks, F. P., GP	Greenville	*Carter, T. L.	Gatesville
*Bittinger, S. M.,	Tb Black Mountain	Brooks, H. E., GP	Clayton	*Carter, W. D., PH	Wadesboro
Bizzell, M. E., OALR	Goldsboro	*Brooks, R. E., U	Burlington	*Castevens, J. C., GP	Clemmons
*Bizzell, T. M.	Goldsboro	Brookshire, H. G.,	(Hon.) Asheville	Casteen, Kenan,	OALR Leaksville
*Black, G. W.	Charlotte	Broughton, A. C., Jr.,	GP Raleigh	Castelloe, Cola, S.	Windsor
Black, O. R.	Landis	*Broun, M. S.,	OALR Roanoke Rapids	Cater, C. D.	Greensboro
Blackshear, T. J.,	OALR Wilson	Brown, C. E.	Salisbury	Cathell, E. J., S	Lexington
Blackwelder, V. H., S	Lenoir	Brown, C. E.	Chapel Hill	Cathell, J. L., GP, S	Lexington
Blair, Andrew, I.	Charlotte	Brown, G. W., (Hon.),	GP Raeford	*Caviness, V. S., I.	Raleigh
Blair, J. L., GP	Gastonia	Brown, J. A.	Banner Elk	Caviness, Z. M., (Hon.),	Pr Raleigh
Blair, J. S.	Gastonia	Brown, J. P., (Hon.),	Fairmont	*Cekada, E. B., I.	Durham
Blair, M. P., (Hon.),	GP Marshville	Brown, J. S., Jr., S	Hendersonville	Chandler, L. D.	Gastonia
Bland, C. A.	Forest City	*Brown, J. S., Sr. (Hon.),	GP Hendersonville	Chaplin, S. C.	Columbia
Bliss, F. E., S	Fletcher	Brown, K. E., ObG	Asheville	Chapman, E. J., Oto and	Bron Asheville
Block, M. E.	Lexington	Brown, L. G., S	Southport	*Cherry, J. H.	Asheville
Blowe, R. B., GP	Weldon	Brown, V. E.	Williamston	*Chester, P. J.,	OALR Southern Pines
Blue, A. McN.	Carthage	*Brown, W. M. B.,	ALR Greenville	*Chiles, G. C., S	Sanford
*Blue, Waylon, GP	Jonesboro	Brownsberger, E. M.,	GP Biltmore	Choate, A. B.	Charlotte
Blumberg, Alfred,	Path Morganton	Brownsberger, J. F., S	Fletcher	Clark, B. T., S	Wilson
Boice, E. S., S	Rocky Mount	Buchanan, L. T., GP	Laurinburg	Clark, D. D.	Clarkton
*Bolt, C. A., GP	Marshville	Buehanan, S. E.	Concord	Clark, H. S., S	Asheville
Bolus, Michael, D	Raleigh	Buckner, J. M., GP	Swannanoa	Clark, M. S., GP	Goldsboro
Boney, E. R.	Kinston	Buffaloe, J. S., (Hon.),	GP Garner	Clay, E. L., I	Oxford
Bonner, J. B., GP	Aurora	Bugg, C. R., Pd	Raleigh	Clayton, M. B., OALR	Statesville
*Bonner, K. P. B., (Hon.),	Pd Morehead City	Buie, R. M., PH	Greensboro	Clement, E. B., (Hon.),	OALR Salisbury
*Bonner, M. D., Tb	Jamestown	*Bulla, A. C., PH	Raleigh	Cliff, B. F.	Brevard
*Booker, E. N., GP	Selma	*Bullitt, J. B., Path	Chapel Hill	Clinton, R. S.	Gastonia
Boone, W. H., (Hon.),	GP Durham	*Bullock, D. D., GP	Rowland	*Clyatt, C. E.	Denton
Boone, W. W., GP	Durham	Bulluck, E. S., S	Wilmington	*Cobb, D. B., S	Goldsboro
*Bost, T. C., S	Charlotte	Bunch, Chas., S	Charlotte	Cobb, Wm. H., (Hon.)	Goldsboro
Bostic, W. C., (Hon.),	Forest City	Bundy, Wm.	N. Wilkesboro	*Cocke, C. H., Tb	Asheville
Bostic, W. C., Jr.	Forest City	Bunn, J. P., GP	Rocky Mount	Cocke, J. E., (Hon.)	Asheville
Bowers, M. A., GP	Winston-Salem	Burleson, W. B., GP	Plumtree	*Coddington, H. A., S	Wilmington
Bowles, F. N., GP	Durham	Burns, J. E., Pd	Concord	Coffey, J. C., GP	Salisbury
Bowling, E. H., (Hon.),	GP Durham	Burt, S. P., (Hon.)	Louisburg	*Cole, W. F., (Hon.), S	Greensboro
Bowman, C. R.	Kannapolis	Burton, C. N., ObG	Asheville	*Coleman, G. S., (Hon.),	Pr Raleigh
*Bowman, E. L., GP	Lumberton	*Burwell, J. C., Jr.,	ObG Greensboro	*Coleman, L. A., OALR	Salisbury
*Bowman, H. E., (Hon.)	Aberdeen	*Busby, G. F., S	Salisbury	Collings, R. M., GP	Greensboro
Braddy, W. H.	Burlington	*Butler, L. J., Pd	Winston-Salem	*Combs, Fielding,	ALR Winston-Salem
Bradford, G. E.,	ALR Winston-Salem	Butt, R. B.	Marion	*Combs, J. J., GP	Raleigh
Bradford, W. B., ObG	Charlotte	*Byerley, A. B., (Hon.)	Cooleemee	*Cook, H. L., Jr.,	OALR Greensboro
*Bradford, W. Z., ObG	Charlotte	*Byerly, J. H., GP	Sanford	*Cook, J. L., PH	Greensboro
Bradshaw, T. G., GP	Wilson	Byerly, W. G., PH	Lenoir	*Cook, W. E.	Mebane
Bradsher, J. S., I	Stovall	Bynum, W. H., (Hon.),	GP Germantown	*Cooke, G. C., S	Winston-Salem
Brandon, W. O.	Concord	Byrd, A. L.	Reidsville	Cooke, Q. E., GP	Murfreesboro
Brantley, Hassell, (Hon.),	GP Spring Hope	Byrd, W. C.	Angier	Cooke, Q. H., GP	Rich Square
Brantley, J. C., GP	Spring Hope	Byrnes, T. H., Path	Charlotte	Cooley, S. S., GP	Black Mountain
Brantley, T. H.	Charlotte	Caddell, G. C., GP	Hoffman	Cooper, A. D., A	Durham
Bray, T. L.	Plymouth	*Calder, D. G., Jr., S	Charlotte	*Cooper, G. M., (Hon.),	PH Raleigh
Brenizer, A. G., (Hon.),	S Charlotte	Caldwell, R. M.	Mount Airy	Coppedge, T. O., PH	Nashville
*Brewer, J. S., GP	Roseboro	*Callaway, J. L., Syph	and D Durham	Coppridge, W. M., U	Durham
		Campbell, A. C., GP	Raleigh	Corbett, C. L.	Dunn
		*Cannon, E. B.	Asheboro	Corbett, J. P.	Swansboro

* Present at 1941 meeting.

Name	Address	Name	Address	Name	Address
*Cornell, W. S.	Fort Bragg	DeArmon, J. McG.,	Charlotte	Falls, Fred	Lawndale
Cornwell, A. M., S.	Lincolnton	(Hon.)	Charlotte	*Farmer, W. D., OALR	Greensboro
*Corpening, O. J.,		*Dees, D. A., OALR	Bayboro	Farrington, Joe	Thomasville
(Hon.)	Granite Falls	Dees, J. E., U.	Durham	Farrington, R. K.,	Thomasville
Costner, W. V., Pd.	Lincolnton	*Dees, R. E., (Hon.), S.	Greensboro	S	Thomasville
Couch, V. F.,		*Dees, R. O., (Hon.), S.	Greensboro	Farrior, J. W.	Warsaw
OALR	Winston-Salem	Dees, S. C., Pd.	Durham	Farthing, J. W., S.	Wilmington
Covington, J. M., GP.	Wadesboro	Dewar, W. B., I.	Raleigh	*Fassett, B. W., (Hon.),	Durham
*Cox, G. S., GP.	Tabor City	*Dick, MacDonald	Durham	OALR	Durham
Cox, S. C., GP.	Kerr	*Dickson, M. S., GP.	Oakboro	Faulk, J. G., S.	Monroe
Cozart, B. F.	Reidsville	Dickinson, E. T., (Hon.),		Fearing, Isaiah,	
Cozart, W. S., GP.	Fuquay Springs	ALR	Wilson	(Hon.)	Elizabeth City
Craddock, A. B., I.	Asheville	*Dickinson, K. L., Ob.	Raleigh	*Fearington, J. C. P.	
*Craig, R. L., N.	Durham	Dillard, G. P.	Draper		Winston-Salem
*Craig, S. D., I.	Winston-Salem	Dixon, G. E., (Hon.),		Feldman, L. H., I.	Asheville
Cranmer, J. B., (Hon.),		GP	Hendersonville	*Felton, R. L., Jr., GP.	Carthage
GP	Wilmington	*Dixon, G. G., GP.	Ayden	*Fenner, E. F., (Hon.)	Henderson
Cranz, O. W., S.	Kinston	Doffermeyre, L. R.	Erwin	Fergus, Leroy, S.	Southport
*Craven, Erle, Jr., I.	Lexington	*Donnelly, G. L., Phar.	Chapel Hill	*Ferguson, G. B., Bron and	
*Craven, F. T.	Concord	*Donnelly, John	Charlotte	OALR	Durham
*Craven, Jean, Pd.	Lexington	*Doshier, W. S.	Wilmington	*Ferguson, R. T., Gyn.	Charlotte
Craven, W. W., (Hon.)	Charlotte	Drake, B. M., PH.	Kenansville	Ferneyhough, W. T.	Reidsville
Crawford, R. H., S.	Rutherfordton	*Drummond, C. S.,		Fetner, L. M.	Lenoir
Crawford, W. J.	Goldsober	Pr	Winston-Salem	Fetzer, P. W.	Reidsville
Credle, A. S.	Colerain	Duckett, V. H., GP.	Canton	Field, B. L., GP.	Salisbury
Creech, L. U., GP.	High Point	Duffy, Chas., GP.	New Bern	Fields, J. A.	Raleigh
Crisp, S. M., GP.	Greenville	Duffy, R. N., (Hon.)	New Bern	*Fields, L. E., GP.	Chapel Hill
*Crispell, R. S., NPsy, Dispensary,		Dula, F. M., S.	Lenoir	Fike, R. L., GP.	Wilson
N. A. S.	Pensacola, Fla.	*Duncan, S. A., GP.	Benson	Finch, O. E., I.	Raleigh
Cromartie, R. S.,		Dunlap, L. V., (Hon.),		Fink, E. S., GP.	Crossnore
(Hon.)	Elizabethtown	GP	Albemarle	Finkelstein, Harold, S.	Durham
Crouch, A. McR., Pd.	Wilmington	Dunn, R. B., ObG	Greensboro	Fitzgerald, J. D., S.	Roxboro
Crouch, T. D.	Stony Point	Durham, C. W., GP.	Greensboro	Fitzgerald, J. II.,	
Crow, S. L., I.	Asheville	Dyer, J. W. D.	High Point	OALR	Smithfield
*Crowell, L. A., Jr., I.	Lincolnton	*Eagle, J. C.	Spencer	Fitzgerald, J. H., Jr.	Lincolnton
Crowell, L. A., Sr., (Hon.),		Eagle, W. W., OALR	Durham	Flagge, P. W., (Hon.)	
S	Lincolnton	Earle, J. B., GP.	Siler City	GP	High Point
*Crump, C. L., OALR	Asheville	Earp, R. E.	Selma	Fleetwood, J. A.	Conway
Crump, Curtis, I.	Asheville	Easley, E. B., ObG	Durham	*Fleming, F. H., GP.	Coats
Crumpler, J. F., Pd.	Rocky Mount	*Easom, H. F., Tb.	Sanatorium	Fleming, L. E., S.	Charlotte
Crumpler, Paul, (Hon.),		Eaves, R. S.	Rutherfordton	*Fleming, M. I.	Rocky Mount
GP	Clinton	Eckel, O. F., (Hon.),		Fleming, R. G.	Rochester, Minn.
Cummings, M. P.	Reidsville	Anes	Asheville	*Fleming, W. L., Syph.	Chapel Hill
*Currie, D. S., (Hon.), GP.	Parkton	Edmondson, Frank, GP.	Tarboro	Flemming, G. M., S.	Cleveland
*Cushing, J. G. N.	Pinebluff	Edwards, A. M.	Taylorsville	Flippin, J. M., (Hon.)	
*Cutchin, J. H., GP.	Whitakers	*Edwards, B. O., (Hon.),			Pilot Mountain
Dale, G. C.	Goldshoro	Tb	Asheville	Flippin, S. T., (Hon.)	Siloam
Daligny, Chas., (Hon.)	Troy	Edwards, F. D., GP.	Lawndale	Flowers, C. E., GP.	Zebulon
*Dalton, R. B., GP.	Liberty	Edwards, V. E., GP.	Stokesdale	Floyd, A. G., GP.	Whiteville
Dalton, W. N., (Hon.),		Eldridge, C. P., GP.	Raleigh	Floyd, L. D., GP.	Fair Bluff
GP	Winston-Salem	Eldridge, H. A., OALR	Dunn	*Ford, D. E.	Washington
Daniel, N. C., (Hon.), Pd.	Oxford	Elfman, S. L., GP.	Fayetteville	*Formyduval, Thurston,	
*Daniel, W. E., U.	Charlotte	*Elias, L. W., (Hon.),		GP	Whiteville
*Daniels, O. C., (Hon.),		Pd	Asheville	Forrest, D. E., GP.	Hillsboro
OALR	New Bern	*Eller, A. J., (Hon.),		Fortescue, W. N.	Hendersonville
Darden, D. B.	Statonsburg	PH	Wilkesboro	Fortune, A. F., (Hon.)	
Daughtridge, A. L.	Rocky Mount	*Ellington, A. J.,		GP	Greensboro
*Davenport, C. A.	Hertford	OALR	Burlington	Foster, H. H., GP.	Norlina
*Davidian, V. A., S.	Smithfield	*Ellinwood, E. H.	Snow Hill	*Foster, J. F., GP.	Sanford
*Davidson, J. E. S.,		*Elliott, A. H., PH.	Wilmington	*Foster, M. T., PH.	Fayetteville
(Hon.)	Charlotte	Elliott, G. D., GP.	Fair Bluff	*Fox, D. B.	Randleman
Davis, C. B., GP.	Wilmington	*Elliott, J. A., D.	Charlotte	Fox, H. J.	Durham
*Davis, J. F.	Hemp	Elliott, J. C., S.	Oxford	*Fox, P. G., U.	Raleigh
*Davis, J. M., Pd.	Wadesboro	*Elliott, W. F., OALR	Lincolnton	*Fox, R. E., PH.	Raleigh
Davis, J. P.	Camp Livingston, La.	Elliott, Wm. M.	Forest City	*Franklin, E. W., ObG.	Charlotte
*Davis, J. W., S.	Statesville	English, E. S.	Brevard	Franklin, R. B. C.,	
*Davis, P. B., GP.	High Point	*Ennett, N. T., PH.	Greenville	PH	Mount Airy
*Davis, R. D., ObG.	Kinston	Erickson, C. C.	Durham	*Frazier, J. W.	Salisbury
Davis, T. W., (Hon.),		Ervin, J. W., GP.	Morganton	Freeman, J. D.,	
OALR	Winston-Salem	Erwin, E. A., GP.	Laurinburg	OALR	Wilmington
*Davison, W. C., Pd.	Durham	Evans, J. E., S.	Wilmington	Freeman, W. T., GP.	Biltmore
*Dawson, W. E., GP.	Hookerton	Ewers, E. P.	Warsaw	Fresh, W. M.	Hickory
Dawson, W. R.	Greensboro	*Faison, Elias	Charlotte	Fritz, J. L.	Asheboro
*Deans, A. W., GP.	Battleboro	*Faison, T. G.	Winton	Fritz, O. G.	Walkertown
		*Fales, Robt., GP.	Wilmington	Fritz, W. A.	Hickory

Name	Address	Name	Address	Name	Address
Frizzelle, M. T., (Hon.),	GP	Green, W. W., (Hon.),	S	*Hatcher, M. A.	Hamlet
*Frye, G. R., S.	Ayden	*Greene, P. Y., PH	Tarboro	Hathcock, T. A., (Hon.),	GP
*Fryer, D. H.	Hickory	Greene, W. A., GP	Burlington		Norwood
*Fuller, H. F.	Leaksville	Greenhill, M. H.	Whiteville	*Hawes, Aubrey	Charlotte
Fulp, J. F.	Kinston	*Griffin, H. L.	Durham	*Hawes, C. F.	Rose Hill
Gage, L. G., I.	Stoneville	*Griffin, M. A., Psy	Asheboro	Hays, B. K., (Hon.), T.	Oxford
Gallant, R. M., Ob	Charlotte	*Griffin, W. R., Psy	Asheville	Haywood, C. L., Jr., S.	Elkin
Gamble, J. R., S.	Asheville	*Griffis, J. W.	Asheville	*Haywood, H. B., (Hon.),	I
*Gambrell, G. C., PH	Denton	*Griffith, F. W.	Raleigh		Raleigh
*Gardner, C. E., Jr., S.	Asheville	*Griffith, L. M.,	Campobello, S. C.	Hedgepeth, E. M.	Roxboro
Garrard, R. L.	Asheville	OALR	Hedgepeth, E. McG., I.	Chapel Hill	
Garren, R. H., (Hon.),	Asheville	Grigg, J. R., GP	Hedgepeth, L. R.,		
OALR	Gastonia	Griggs, W. T., (Hon.),	OALR		
Garrenton, Connell, GP	Monroe	Pr	Hedgepeth, W. C., Ob		
*Garrett, F. B.,	Bethel		Hedrick, C. R.		
OALR	Poplar Branch		*Hee, J. R., PH		
*Garrison, R. B., Pd	Winston-Salem		Heighway, S. C., (Hon.),		
Garriss, F. H.	High Point		GP		
Garvey, F. K., U.	Lowell				
*Garvey, R. R., U.	Jacksonville				
*Gaskin, J. S., GP	Yanceyville				
*Gaskin, L. R., GP	Washington				
Gaskin, M. B., GP	Boone				
Gaul, J. S., Or	Lenoir				
*Gay, C. H.	Marion				
*Geddie, K. B., Pd	Lillington				
Gentry, G. W., (Hon.)	Raleigh				
Gibson, J. W., S.	Roanoke Rapids				
Gibson, R. L., (Hon.),	Monroe				
S	Durham				
Gibbs, E. W.	Hickory				
Gibson, L. O., GP	Lenoir				
*Gibson, M. R., (Hon.),	Charlotte				
OALR	Shelby				
Gilbert, E. L.	Statesville				
Gill, J. A.	Raleigh				
Gillespie, S. C., I.	Winston-Salem				
*Gilmore, C. M.	Elizabeth City				
Gilmour, M. T.	Asheville				
Gilreath, F. H.,	Asheville				
(Hon.)	Greensboro				
*Glascok, J. H., (Hon.),	Charlotte				
GP	N. Wilkesboro				
Glenn, C. A., S.	Greensboro				
Glenn, C. F., S.	Gastonia				
Glenn, Channing	Rutherfordton				
*Glenn, H. F., Jr., GP	Elizabethtown				
Glenn, L. N., (Hon.),	Gastonia				
S	Gastonia				
Gold, Ben, Pd	Shelby				
Gold, C. F.	Shelby				
Gold, T. B.	Graham				
*Goley, W. C.	Graham				
*Goode, T. V., S.	Statesville				
Gooding, G. V.	Kenansville				
Goodman, A. B., (Hon.)	Lenoir				
*Goodwin, C. W.	Wilson				
*Goodwin, O. S., GP	Apex				
Gorham, H. J.	Nashville				
Gouldlock, J. J., GP	Monroe				
Goudge, M. E., GP	Durham				
Gouge, A. E.	Bakersville				
Gove, A. M., (Hon.),	GP				
GP	Greensboro				
Grady, J. C., (Hon.), GP	Kenly				
Grady, W. E., (Hon.)	Tryon				
Graham, Chas., S.	Wilmington				
*Graham, W. A., ObG	Durham				
Grantham, W. L.,	GP				
(Hon.), U	Asheville				
*Graves, R. W., N.	Durham				
*Gray, C. L.	Sanatorium				
Grayson, C. S., (Hon.),	GP				
GP	High Point				

* Present at 1941 meeting.

Name	Address	Name	Address	Name	Address
*Holman, R. L., Path.	Chapel Hill	Johnson, W. C., GP.	Canton	*Koonce, D. B., S.	Wilmington
Holmes, A. B.	Fairmont	*Johnson, W. M., (Hon.),	Winston-Salem	Koonce, S. E., (Hon.),	OALR
*Holt, D. W., I.	Greensboro	I	Winston-Salem	OALR	Wilmington
*Holt, W. P., (Hon.), S.	Erwin	*Johnson, W. R., I.	Asheville	Kornegay, L. W., (Hon.),	S
Holton, T. J.	Charlotte	Johnston, Christopher, I.	Durham	S	Rocky Mount
Hooper, J. W., S.	Wilmington	Johnston, J. G., OALR.	Charlotte	Kossove, A. A.	Charlotte
Hoover, C. H., (Hon.),	GP	Johnston, W. W., ObG.	Manteo	Kossove, I. L.	Charlotte
GP	Crouse	Jonas, J. F., (Hon.)	Marion	*Kress, E. L.	Wadesboro
Hoover, W. A., S.	Murphy	*Jones, B. N.,	OALR	*Kress, J. H., S.	Wadesboro
Horack, H. M.	Durham	OALR	Winston-Salem	Lackey, W. J.	Fallston
Horton, W. C., (Hon.),	Pr	Jones, C. C.	Apex	*Lafferty, R. H., (Hon.),	R
Houser, E. A., (Hon.)	Raleigh	*Jones, C. P., Jr.	Snow Hill	R	Charlotte
Houser, F. M.	Shelby	Jones, D. C.	Lansing	Lancaster, F. J.	Lexington
*Houser, O. J.	Cherryville	*Jones, O. H., Ob	Charlotte	Lancaster, N. F.,	GP
Houser, O. J.	Charlotte	Jones, R. D., (Hon.), S.	New Bern	GP	Waynesville
Hovis, L. W., (Hon.),	Jones, R. R.,	GP	Winston-Salem	Lancaster, W. J., S.	Wilmington
OALR	Charlotte	*Jones, R. R., Jr., S.	Durham	*Lane, B. E., I.	Raleigh
Howard, C. E., R.	Goldsboro	Jones, T. T., GP.	Durham	Lane, J. L., OALR.	Rocky Mount
*Howell, W. L.	Ellerbe	*Jones, W. M., (Hon.)	Greensboro	*Lanier, V. C.	Welcome
Hubbard, C. C., (Hon.)	Farmer	Jones, W. M., Pd.	Gastonia	*Lapsley, A. F., GP.	Badin
Hubbard, F. C., S.	N. Wilkesboro	Jones, W. S., GP.	Nashville	Lassiter, V. C.,	S
*Hudgins, H. A., GP.	Rutherfordton	Jordan, W. P., GP.	Windsor	S	Winston-Salem
*Hudson, C. C., PH.	Greensboro	Joyner, G. W., S.	Asheboro	*Lassiter, W. H., GP.	Selma
Huffines, T. R., U.	Asheville	Joyner, P. W.	Enfield	Laton, J. F., OALR.	Albemarle
Hundley, Deane, Jr.	Wallace	*Judd, E. C., S.	Raleigh	Lattimore, E. B., (Hon.)	Shelby
*Hunsucker, C. R.	Hickory	Judd, G. B., GP.	Varina	*Lawrence, B. J., S.	Raleigh
Hunt, J. F.	Spindale	Judd, J. M., (Hon.), GP.	Varina	*Lawson, R. B., Pd.	Chapel Hill
*Hunt, J. S., Pd.	Charlotte	Justa, S. H., U.	Rocky Mount	*LeBauer, S. F., I.	Greensboro
*Hunt, W. B.	Lexington	Justice, G. B., (Hon.)	Marion	Lee, A. F., ObG.	Seattle, Wash.
*Hunter, J. P.	Cary	Justice, W. S.	Asheville	*Lee, J. M., GP.	Newton Grove
*Hunter, W. B.	Lillington	Kafer, O. A.	New Bern	Lee, L. V., (Hon.)	Lattimore
*Hunter, W. C.	Wilson	*Kavanagh, W. P.	Cooleemee	*Lee, Mike, GP.	Kinston
*Hunter, W. M., (Hon.),	Pd	*Keiger, O. R., GP.	Winston-Salem	*Lee, T. L., ObG.	Kinston
Pd	Charlotte	*Keiter, W. E., Pd.	Kinston	*Leinbach, R. F., (Hon.),	I
*Hurdle, S. W.,	GP	*Keith, M. Y., Pd.	Greensboro	I	Charlotte
Huston, J. W., Tb.	Asheville	Kelly, L. W., I.	Charlotte	*Lennon, H. C.	Greensboro
Hutchens, E. M., (Hon.),	GP	*Kemp, M. D.	Pinebluff	*Leonard, J. C., Jr.	Lexington
GP	N. Wilkesboro	*Kendall, B. H.	Shelby	*Lewis, J. S.	Hickory
Hutchinson, S. S.	Bladenboro	Kende, T. N.	Augusta, Ga.	Lihn, Henry, GP.	Fairmont
Hyde, F. E.	Beaufort	*Kennedy, J. P., S.	Charlotte	*Liles, L. C., Psy.	Raleigh
Ingersoll, L. M., A.	Asheville	Kennedy, L. T.,	PH	*Lilly, J. M., (Hon.),	OALR
Ingram, C. B., (Hon.)	Mt. Gilead	Kent, A. A., (Hon.)	Winston-Salem	OALR	Fayetteville
Irwin, Henderson.	Eureka	Winter Park, Fla.		Linville, A. Y., (Hon.),	GP
Irwin, R. F.	Magnolia	*Kent, A. A., Jr.	Granite Falls	GP	Winston-Salem
*Ivey, H. B., R.	Goldsboro	*Kerns, T. C., OALR.	Durham	Lister, J. L., (Hon.)	Jackson
Ivey, R. R., S.	Asheville	*Kerr, J. E., (Hon.)	Danbury	*Little, H. L.	Gibsonville
Izlar, H. L., GP.	Winston-Salem	Kerr, J. T.	Wilson	Little, L. M., GP.	Statesville
Jacobs, J. E., OrS.	Charlotte	Killian, F. M., OALR.	Franklin	*Livingston, E. A., GP.	Gibson
Jacocks, W. P.	Delhi, India	Kimmelsteil, Paul.	Charlotte	Llewellyn, J. T.	Williamston
*James, A. A., Jr., GP.	Sanford	King, E. S., Bact.	Winston-Salem	*Lock, F. R., Ob.	Winston-Salem
*James, A. W., S.	Laurinburg	King, P. M., (Hon.)	Charlotte	Logan, F. W. H.	Rutherfordton
James, F. P., GP.	Laurinburg	King, R. M., (Hon.)	Concord	*Lohr, Dermot, GP.	Lexington
*James, W. D., (Hon.), S.	Hamlet	*King, R. R., PH.	Boone	*London, A. H., Jr., Pd.	Durham
Jarman, F. G., S. Roanoke Rapids		Kinlaw, M. C., GP.	Pembroke	Long, I. C.	Goldsboro
*Jennings, C. W., II.	Greensboro	Kinlaw, W. B.	Kinston	Long, L. L., GP.	Laurel Springs
*Jennings, R. G.	Thomasville	Kinsman, H. F., (Hon.)	Hamlet	Long, R. H., NP.	Morganton
Jervay, A. J., S.	Tryon	*Kirby, G. S., (Hon.)	Marion	*Long, V. McK., (Hon.),	U
John, Peter, (Hon.),	GP	*Kirby, W. L.,	R and D	U	Winston-Salem
GP	Laurinburg	R and D	Winston-Salem	*Long, W. M., S.	Mocksville
*Johnson, A. N., GP.	Garland	Kirk, W. R., (Hon.),	GP	*Long, Z. F., Pd.	Rockingham
Johnson, C. T.	Red Springs	GP	Hendersonville	Lord, M. J.	Montreat
*Johnson, Floyd, (Hon.),	PH	Kirksey, J. J., Pd.	Morganton	Lore, R. E.	Lenoir
PH	Whiteville	Kitchin, T. D.,	(Hon.)	Lott, W. C., U.	Asheville
Johnson, G. F., I.	Spray	(Hon.)	Wake Forest	Love, B. E., (Hon.)	Roxboro
Johnson, G. W., ObG.	Wilmington	Klenner, F. R.	Reidsville	*Love, W. M., GP.	Monroe
*Johnson, H. L., S.	Greensboro	*Knight, F. L., S.	Sanford	Loveless, T. C.	Henrietta
Johnson, J. B.	Old Fort	*Knight, W. P., (Hon.)	Greensboro	*Lowery, J. R.	Salisbury
*Johnson, J. L.	Graham	Knoefel, A. E., Jr.,	GP	*Lubchenko, N. E.	Harrisburg
Johnson, J. R.	Dunn	GP	Black Mountain	*Lupton, C. C.	Burlington
*Johnson, J. R., S.	Elkin	*Knox, J. C., PH.	Raleigh	*Lupton, E. S., Pd.	Raleigh
Johnson, T. C., (Hon.),	S	Knox, John, (Hon.),	GP	*Lutterloh, I. H., Jr., S.	Sanford
S	Lumberton	GP	Lumberton	Lyday, C. E.	Gastonia
Johnson, W. A.	Reidsville	Koogler, B. R.	Star	*Lyday, R. O., S.	Greensboro
				Lyman, R. S.	Durham
				Lynch, G. B.	Brevard

Name	Address	Name	Address	Name	Address
Lyon, B. R.	Greensboro	McCotter, St. E., (Hon.)	Bayboro	Mears, G. A., S.	Asheville
MacConnell, J. W., (Hon.), OALR	Davidson	McCoy, T. M., (Hon.)	Charlotte	Mebane, W. C., Jr., S	Wilmington
Mackie, G. C.	Wake Forest	McCracken, C. M., (Hon.)	Fairview	Menefee, E. E., Jr.	Durham
MacMillan, E. A., I	Winston-Salem	*McCracken, J. R., (Hon.), OALR	Waynesville	*Menzies, H. C., (Hon.)	Hickory
*MacNider, W. deB., (Hon.), U	Chapel Hill	McCracken, M. H., GP	Asheville	*Menzies, H. H.	Hickory
MacRae, J. D., R	Asheville	McCuston, A. M., Pr	Mount Olive	Meriwether, B. M.	Asheville
Maddrey, M. C., S	Roanoke Rapids	*McCutchan, Frank	Salisbury	Merritt, J. F.	Greensboro
*Magill, H. B., Jr.	Pineville	*McCutcheon, W. B., S	Durham	Merritt, J. H., (Hon.)	Woodsdale
*Makepeace, A. W.	Chapel Hill	McDade, B. B., R	Burlington	*Mewborn, J. M.	Farmville
Malloy, S. A., (Hon.), Ob	Yanceyville	McDonald, A. M., U	Charlotte	*Mickley, Jack, GP	Tabor City
*Maness, A. K., Ob	Greensboro	McDonald, R. L., GP	Thomasville	*Milam, D. F.	Chapel Hill
*Mann, I. T., G	High Point	McDowell, R. H.	Belmont	Miles, M. S., (Hon.)	Greensboro
*Manning, I. H., (Hon.)	Chapel Hill	*McDowell, W. K., PH	Tarboro	*Milham, G. C., I	Hamlet
*Manning, I. H., Jr., I	Durham	McDuffie, J. T.	Spruce Pine	Miller, Harry, GP	Murphy
*Markham, Blackwell, S.	Durham	*McEachern, Duncan, GP	Wilmington	Miller, J. F., S	Marion
*Mariner, N. B., (Hon.)	Belhaven	*McElwee, R. S., (Hon.), R	Statesville	Miller, O. L., Or	Charlotte
Marr, M. W., I	Pinehurst	McFadyen, O. L., I	Fayetteville	Miller, R. B., (Hon.), Pd	Goldsboro
Marsh, F. B.	Salisbury	McFadyen, P. R., Jr.	Rockingham	Miller, R. C.	Gastonia
*Marshall, J. F., S	Winston-Salem	*McGeachey, R. S., (Hon.), PH	New Bern	*Miller, W. E., S	Whiteville
Martin, D. S., Pd and Bact	Durham	*McGee, R. L., GP	Raleigh	*Miliken, J. S.	Southern Pines
Martin, J. A., Pd	Lumberton	*McGehee, J. W., (Hon.), Ob	Reidsville	*Mills, C. R., Oph	Greensboro
Martin, J. F., (Hon.), OALR	Dunn	McGowan, Claudius	Plymouth	Mitchell, G. T., GP	Wilkesboro
Martin, J. H., GP	Red Oak	*McGowan, J. F., OALR	Asheville	*Mitchell, G. W.	Wilson
Martin, J. W., GP	Roanoke Rapids	McGrath, F. B., GP	Lumberton	Mitchell, L. P.	Spindale
Martin, L. P., S	Mocksville	*McGuire, B. B., PH	Lincolnton	Mitchell, P. H., (Hon.)	Ahoskie
Martin, T. A.	Maxton	*McIntosh, D. M., (Hon.)	Old Fort	*Mitchell, R. C., I	Mount Airy
Martin, W. F., S	Charlotte	McIntosh, D. M., Jr.	Marion	Mitchell, R. H.	Gastonia
Martin, W. J.	Davidson	McIntosh, W. R.	Rockingham	Mitchell, T. B.	Shelby
Massey, C. C., Pr	Charlotte	McIntyre, Stephen, S & U	Lumberton	*Mitchell, Z. P.	Shelby
*Matheson, J. G.	Ahoskie	*Melver, Lynn, (Hon.), GP	Sanford	Mitchener, J. S., OALR	Raleigh
*Mathews, R. W.	Greensboro	McKay, H. W., U	Charlotte	*Mock, C. G.	Salisbury
Mathews, V. M., Ob	Charlotte	*McKay, J. F., (Hon.)	Buies Creek	*Mock, F. L., (Hon.)	Lexington
*Mathieson, K. M., GP	Pittsboro	*McKay, R. W., U	Charlotte	*Monk, H. L., (Hon.)	Salisbury
Matros, N. H., S	Oteen	*McKay, W. P., OALR	Fayetteville	*Monroe, C. R., S	Pinehurst
Matthews, J. O., (Hon.), GP	Clinton	McKee, J. S., Jr.	Morganton	*Monroe, L. T.	Kannapolis
*Matthews, M. L., (Hon.), OALR	Sanford	McKee, L. M., GP	Durham	Montgomery, H. M., (Hon.)	Burlington
Matthews, W. C.	Davidson	*McKenzie, B. W., S	Salisbury	Montgomery, J. C., Anes	Charlotte
Matthews, W. W.	Leaksville	*McKenzie, W. N., PH	Albemarle	Moore, A. W.	Charlotte
*Mauzy, C. H., Jr., Ob	Winston-Salem	*McKnight, R. B., S	Charlotte	Moore, B. D.	Mount Holly
*Mayer, W. B., D	Charlotte	McLaughlin, C. S., (Hon.)	Charlotte	Moore, D. B., S	Badin
McAdams, C. R.	Belmont	McLaughlin, C. S., Jr.	Charlotte	Moore, D. F., ObG	Shelby
McAlister, H. A.	Lumberton	McLaughlin, J. E., (Hon.)	Troutman	Moore, E. V.	Earl
*McAlister, Jean	Greensboro	*McLean, E. K.	Charlotte	Moore, H. B.	Graham
McAlister, Russell	Williamston	McLelland, W. D.	Mooresville	Moore, J. A., S	Asheville
McAnally, J. McG., S	Reidsville	McLemore, G. A., (Hon.), GP	Smithfield	Moore, K. C.	Newton Grove
McAnally, W. J., (Hon.)	High Point	*McLeod, A. H., (Hon.)	Aberdeen	Moore, Oren, Ob	Charlotte
McBane, T. W., GP	Pittsboro	McLeod, J. P., U	Marshville	Moore, R. A., Or	Winston-Salem
McBee, Paul, S	Marion	McLeod, N. H., GP	Raleigh	Moore, R. A., Or	Charlotte
McBryde, A. M., Pd	Durham	*McLeod, V. C.	Southern Pines	Moore, R. H., GP	Canton
*McCain, P. P., Tb	Sanatorium	McLesky, J. H.	Charlotte	Moore, W. H., ObG	Wilmington
*McCain, W. K.	High Point	*McManus, H. F.	Raleigh	Moorefield, R. H.	
McCain, W. R., (Hon.)	High Point	*McMillan, J. M.	Candor		North Kannapolis
McCampbell, John, (Hon.), P	Morganton	*McMillan, R. D., GP	Red Springs	*Morehead, R. P., Path	Winston-Salem
McCants, C. H., S	Winston-Salem	McMillan, R. L.	Winston-Salem	Morgan, B. E., GP	Asheville
McChesney, W. W., Ob	Gastonia	McNairy, Caroline, Ob	Lenoir	Morgan, G. A.	Asheville
McClees, E. C.	Elm City	*McNeill, J. H., I	N. Wilkesboro	*Morgan, W. G.	Chapel Hill
McClelland, J. O., GP	Maxton	McPhail, L. D., (Hon.), Pr	Charlotte	Morris, J. A., (Hon.)	Franklinton
McConnell, H. R.	Gastonia	*McPheeters, S. B., PH	Goldsboro	*Morris, J. W., S	N. Wilkesboro
		*McPherson, C. W., OALR	Burlington	Morris, R. H.	Concord
		*McPherson, S. D., (Hon.), OALR	Durham	Morrow, W. C., GP	Andrews

* Present at 1941 meeting.

Name	Address	Name	Address	Name	Address
*Munroe, H. S., Jr., S.	Charlotte	*Orr, C. C., (Hon.), I.	Asheville	Peterson, C. A.,	
Munt, H. F.	Winston-Salem	Orr, P. B., (Hon.)	Asheville	(Hon.)	Spruce Pine
Murphison, D. R., I.	Wilmington	Osborne, G. H., GP.	Waynesville	Petteway, G. H.	Charlotte
Murphy, G. W., R.	Asheville	Osborne, J. E., S.	Rosman	Pfuhl, S. F., (Hon.),	
*Murray, R. L., GP.	Raeford	Outland, R. B.	Rich Square	GP	Winston-Salem
*Myers, Alonzo, Or.	Charlotte	*Outlaw, J. K., OALR.	Albemarle	Phelps, J. M.	Creswell
Myers, D. L.	Harmony	*Overcash, W. E.,		Phifer, E. W., (Hon.),	
Myers, H. T.	Lexington	Tb	Southern Pines	GP	Morgantown
*Myers, J. Q., (Hon.)	Charlotte	Owen, C. F., Jr., GP.	Canton	*Phillips, C. H.,	
Nalle, B. C., (Hon.),		Owen, J. F., NP.	Raleigh	(Hon.)	Thomasville
ObG	Charlotte	Owen, M. L., GP.	Canton	Phillips, E. N.,	
Nance, C. L.	Charlotte	*Owen, R. H., GP.	Canton	GP.	N. Wilkesboro
*Nash, J. F.	St. Pauls	*Owens, Z. D.	Elizabeth City	Pickett, J. A., (Hon.)	Burlington
*Naumoff, Philip	Charlotte	*Pace, K. B., GP.	Greenville	Pipes, D. M.	Greensboro
Neal, J. W., (Hon.), GP.	Monroe	Pace, S. E.	Leaksville	Pittman, E. E.	Oak City
*Neal, K. P., S.	Raleigh	Paddison, J. R., (Hon.),		*Pittman, M. A., Tr.	Wilson
*Neal, P. N., Ob.	Raleigh	GP	Kernersville	*Pitts, W. R., NS.	Charlotte
Nebblett, H. C., Oph.	Charlotte	Padgett, C. K.	Shelby	Plyler, R. J.	Salisbury
Neese, K. E., GP.	Monroe	Padgett, P. C.,		Pollock, Raymond,	
Nelson, R. J.,		GP	Kings Mountain	(Hon.)	New Bern
(Hon.)	Robersonville	Palmer, Horace, GP.	Littleton	*Pool, B. B., GP.	Winston-Salem
*Nelson, W. H., GP.	Clinton	*Palmer, M. C.	Tryon	*Poole, C. G.	Winston-Salem
Neville, C. H.	Scotland Neck	*Palmer, Y. S., GP.	Valdese	Poole, M. B.	Dum
*Newell, H. A., (Hon.),		*Parker, H. R., GP.	Greensboro	Post, J. J., GP.	Greensboro
OALR	Henderson	*Parker, O. L., OALR.	Clinton	*Powell, A. H., GP.	Durham
*Newell, L. B., (Hon.)	Charlotte	*Parker, P. G.	Erwin	Powell, H. S., GP.	Gastonia
Newland, C. L., S.	Brevard	Parker, S. F.	Shelby	Powell, J. A., (Hon.)	Edenton
*Newman, H. H., S.	Salisbury	Parker, W. R.	Jackson	Powers, F. P., ALR.	Raleigh
Newton, H. L.	Charlotte	Parks, W. B.	Gastonia	*Pressley, J. L., GP.	Statesville
Newton, W. K.,		*Parks, W. C., Jr.	High Point	Pressly, J. M.	Belmont
OALR	N. Wilkesboro	Parrette, N. C.	Robbinsville	Preston, J. Z.	Tryon
Nichols, A. A., (Hon.)	Sylva	Parrette, R. G.	Andrews	Price, H. H.	Draper
*Nichols, A. F., (Hon.)	Roxboro	Parrott, M. C., S.	Kinston	Pritchard, R. W.	Kinston
*Nichols, R. E., Jr., GP.	Durham	*Parrott, W. T., (Hon.),		*Procter, I. M., ObG.	Raleigh
Nichols, R. E., Sr., (Hon.),		GP	Kinston	Pruitt, S. P.	Shelby
GP	Durham	Parsons, P. B.	Charlotte	Pugh, C. H.	Gastonia
Nicholson, B. M.	Enfield	*Parsons, W. H., GP.	Ellerbe	Pulliam, B. E.	Winston-Salem
*Nicholson, N. G., Jr.	Rockingham	Pate, A. H.	Goldsboro	Purdy, J. J.	Oriental
Nicholson, P. A., (Hon.),		Pate, F. J., (Hon.),		Putney, R. H.	Elm City
Ob	Washington	OALR	Greensboro	*Query, R. Z., Jr.	Charlotte
Nicholson, W. M., I.	Durham	Pate, J. F., GP.	Canton	Quickel, J. C., OALR.	Gastonia
Nisbet, D. H., I.	Charlotte	*Pate, J. G., GP.	Gibson	*Quinn, R. F.	Magnolia
Noble, R. P., (Hon.), R.	Raleigh	*Patman, W. L., S.	Siler City	Raby, J. G., GP.	Tarboro
Nobles, J. E., (Hon.)	Greenville	Patrick, G. R., Jr.	Bessemer City	*Raine, W. T., I.	Fayetteville
*Noblin, R. L.	Oxford	Patterson, F. G., GP.	Chapel Hill	Ramsaur, J. T., GP.	Cherryville
*Noel, W. W.	Henderson	*Patterson, F. M., U.	Greensboro	Ramseur, W. L.	Kings Mountain
Noell, R. H., GP.	Rocky Mount	Patterson, J. F., (Hon.),		*Ramsey, J. G., S.	Washington
Nolan, J. O.	Kannapolis	GP	New Bern	*Rand, C. H., Ob.	Fremont
Norburn, C. S., S.	Asheville	Patterson, J. H.	Broadway	Rand, E. G.	Raleigh
*Norburn, R. L., S.	Asheville	Patton, W. H., Jr.,		*Raney, R. B., Or.	Durham
*Norfleet, E. P., Pd.	Roxobel	GP	Morgantown	Rankin, S. W.,	
*Norman, D. F.	Gastonia	Pearse, R. L., ObG.	Durham	OALR	Winston-Salem
Norman, J. S., OALR.	Gastonia	*Peasley, E. D., Path.	Raleigh	Rankin, W. S., (Hon.),	
Norment, W. B., S.	Greensboro	Peede, A. W.	Lillington	PH	Charlotte
Norris, Henry,		*Peeler, C. N., (Hon.),		Ranson, J. L., Anes.	Charlotte
(Hon.)	Waverly Mills, S. C.	Peeler, J. H., (Hon.),		Ravenel, S. F., Pd.	Greensboro
*Northington, J. M.,		Ob	Salisbury	Ray, F. L., U.	Charlotte
(Hon.), I.	Charlotte	*Peery, V. P., OALR.	Kinston	*Ray, J. B., (Hon.)	Leaksville
*Norton, J. W. R., PH.	Fort Bragg	Peete, C. H., (Hon.),		Ray, O. L., (Hon.), GP.	Raleigh
*Norwood, Ballard, PH.	Oxford	Ob	Warrenton	Ray, S. P.	Leaksville
*Nowell, S. C.	Hickory	Pegg, F. G.	Winston-Salem	Reaves, W. P., (Hon.),	
Nowlin, Preston, S.	Charlotte	*Pepper, J. K., (Hon.),		OALR	Greensboro
*O'Brian, A. L.	Raeford	R	Winston-Salem	Reavis, C. W.	Raleigh
O'Dell, J. W.	Dunn	*Perry, A. H.	Wood	Redding, A. H.,	
*Oehlbeck, L. W., R.	Morgantown	*Perry, D. R., GP.	Durham	(Hon.)	Cedar Falls
*Offutt, V. D.	Kinston	Perry, E. M., GP.	Rocky Mount	Redwine, J. D.	Lexington
*Ogburn, H. H., S.	Greensboro	*Perry, G. G., GP.	Rocky Mount	Reed, D. H., (Hon.), GP.	Wagram
*Ogburn, L. C.,		Perry, H. B., GP.	Boone	*Reeves, G. F.	East Bend
Ob	Winston-Salem	Person, E. C., (Hon.),		Reeves, J. L., GP.	Canton
Oliver, A. S., Ob.	Raleigh	OALR	Pikeville	Reeves, R. J., GP.	Leicester
Orgain, E. S., I.	Durham	Persons, E. L., I.	Durham	*Reeves, R. J., R.	Durham
*Ormand, J. W., GP.	Monroe	Peters, A. R.	Washington	*Register, J. F., Or.	Greensboro
*Ormond, A. L.,		*Peters, D. B.	Raleigh	Reid, C. G.	Charlotte
Tb	Black Mountain	Peters, W. A., S.	Elizabeth City	Reitzel, C. E., (Hon.)	Lowell

Name	Address	Name	Address	Name	Address
*Reque, Paul	Durham	Russell, W. M., OALR	Asheville	*Sloop, E. H., (Hon.)	Crossnore
*Reynolds, C. V., (Hon.),		Sabiston, Frank, OALR	Kinston	Small, V. R., GP	Clinton
PH	Raleigh	Sader, Julius, GP	Brevard	Smith, A. J.,	Black Creek
*Rhodes, J. S.,		Sadler, R. C., GP	Whiteville	Smith, A. T., GP	Greensboro
(Hon.)	Williamston	Saliba, M. M., (Hon.),		*Smith, A. T., G	Durham
Rhodes, J. S., U	Raleigh	Oph	Wilson	Smith, B. R., I	Asheville
*Rhudy, B. E., R	Greensboro	Salley, E. McQ., (Hon.),		Smith, C. T., I	Rocky Mount
*Rhyne, R. E., (Hon.),		GP	Hendersonville	Smith, D. L., Pd	Saluda
PH	Gastonia	Salmons, H. C., (Hon.)	Elkin	*Smith, D. T., I	Durham
*Rhyne, S. A., GP	Statesville	Sanger, P. W.	Charlotte	Smith, F. C., Oph	Charlotte
*Richardson, F. H.,		Saunders, J. H.,		*Smith, F. L.	Burlington
Psy	Black Mountain	(Hon.)	Williamston	Smith, G. M., GP	Monroe
*Richardson, W. P.,		Saunders, J. R.	Morganton	Smith, H. B., GP	N. Wilkesboro
PH	Chapel Hill	Saunders, J. T., Or	Asheville	Smith, Joseph	Greenville
Ricks, L. E., (Hon.),		*Saunders, S. A.	Aulander	*Smith, J. A., S	Lexington
GP	Fairmont	*Saunders, S. S., Pd	High Point	Smith, J. E.	Windsor
Riddle, J. B., (Hon.)	Morganton	Schaffle, Karl, Tb	Asheville	Smith, J. G., I	Rocky Mount
*Riggsbee, A. E., (Hon.),		Schallert, P. O.,		Smith, J. McN. (Hon.),	
GP	Durham	(Hon.)	Winston-Salem	GP	Rowland
*Ringer, P. H., (Hon.),		*Schenk, S. M., S	Shelby	Smith, M. B.	Ramseur
Tb	Asheville	*Schiebel, H. M., S	Durham	*Smith, O. F.,	
*Ritchie, R. F., Psy	Raleigh	Schoenheit, E. W., I	Asheville	(Hon.)	Scotland Neck
*Roberson, Foy, S.	Durham	Schoonover, R. A.	Greensboro	*Smith, O. N., I	Greensboro
Roberson, K. S., GP	Waynesville	Schuler, J. E., GP	Durham	Smith, R. E.	Mount Airy
Roberts, B. N., GP	Hillsboro	*Schultze, Wm.	Durham	*Smith, R. M.	Greensboro
Roberts, B. W., Pd	Durham	Scott, S. F.	Union Ridge	Smith, S. A., OALR	Whiteville
Roberts, L. C., U	Durham	Scruggs, W. H.	Concord	Smith, T. A.	Charlotte
*Roberts, W. M., Or	Gastonia	Scruggs, W. M., S	Charlotte	Smith, W. C.	Goldsboro
*Robertson, E. M., S	Durham	*Seay, H. L., Tb	Huntersville	Smith, W. F., (Hon.),	
*Robertson, J. F., S	Wilmington	*Seay, T. W.	Spencer	GP	Chadbourne
Robertson, J. M., GP	Harmony	*Selby, W. E., NP	Charlotte	*Smith, W. G., S	Thomasville
Robertson, J. N.,		Sessoms, E. T., GP	Roseboro	*Smith, W. H., I	Goldsboro
OALR	Fayetteville	Sevier, J. T., (Hon.)	Asheville	Smoot, J. E., (Hon.)	Concord
Robertson, L. H.	Salisbury	*Shafer, I. E., Ob	Salisbury	*Soady, J. H.	Asheboro
*Robinson, C. W.	Charlotte	*Sharp, O. L.	Greensboro	Sorrell, F. Y., GP	Wadesboro
Robinson, D. E., Pd	Burlington	*Sharpe, C. R.	Lexington	Spainhour, E. H., (Hon.),	
*Robinson, J. D.	Wallace	*Sharpe, F. A., ObG	Greensboro	GP	Winston-Salem
Robinson, J. L., S	Gastonia	Sharpe, F. L., (Hon.)	Statesville	*Sparrow, T. DeL., S	Charlotte
Rodick, J. C., R	Winston-Salem	*Shaw, J. A., Pd	Fayetteville	Speas, D. C., GP	Winston-Salem
*Rogers, G. W., PH	Chapel Hill	Shaw, L. R., GP	Statesville	*Speas, W. P., Oph	Winston-Salem
Rogers, W. A., (Hon.)	Franklin	*Shelburne, P. A.	Greensboro	*Speed, J. A., GP	Durham
Rollins, C. D.	Henderson	Sherrill, H. R.	Shelby	Speight, J. A.	Rocky Mount
*Rollins, V. B.	Henderson	Sherrill, P. M.	Thomasville	Speigle, C. H.	Grimesland
*Root, A. S., Pd	Raleigh	Shirley, H. C., ALR	Charlotte	Spencer, F. B., (Hon.)	Salisbury
*Roper, W. H., Tb	Sanatorium	*Shull, J. R., R	Charlotte	Spicer, R. W., Ob	Winston-Salem
Rose, A. H., (Hon.),		*Sibbury, J. B., Pd	Wilmington	Spikes, N. O., GP	Durham
GP	Smithfield	*Sigman, F. G., (Hon.)	Spencer	*Spoon, S. C.	Burlington
*Rose, D. J.	Goldsboro	*Sikes, C. H.	Greensboro	Sprinkle, C. N., GP	Weaverville
Rose, J. W., GP	Pikeville	Sikes, G. L., (Hon.),		Sprunt, D. H., Path	Durham
*Rosenau, M. J., PH	Chapel Hill	GP	Salemberg	Sprunt, W. H., Jr.,	
Ross, G. H., (Hon.), GP	Durham	*Simmons, A. W., GP	Burlington	S	Winston-Salem
Ross, O. B.	Charlotte	Simmons, R. R., U	Winston-Salem	*Squires, C. B., U	Charlotte
*Ross, R. A., ObG	Durham	Simons, C. E.	Wilson	Staley, S. W., (Hon.),	
Ross, T. W.	Charlotte	*Simpson, H. H.	Elon	GP	Rocky Mount
*Rosser, R. G., (Hon.), Pd	Vass	*Sinclair, L. G., S	Raleigh	Stanfield, W. W.	Dunn
Rousseau, J. P.,		*Singletary, G. C.	Clarkton	*Stanford, L. F., Path	Durham
R	Winston-Salem	Sink, C. S., GP	N. Wilkesboro	*Stanford, W. R., I	Durham
*Royal, B. F., S	Morehead City	*Sink, V. R.,		Stanley, J. H., (Hon.),	
Royal, D. M., GP	Salemberg	OALR	Winston-Salem	GP	Four Oaks
Royall, M. A., (Hon.),		*Sisk, C. N., PH	Waynesville	Stanton, D. A.,	
OALR	Elkin	*Sisk, W. N.	Asheville	(Hon.)	High Point
*Royster, C. L.	Raleigh	*Siske, G. C.	Pleasant Garden	*Starling, H. M.,	
Royster, H. A., (Hon.),		*Skeen, L. B.	Sanatorium	S	Winston-Salem
S	Raleigh	Skinner, L. C., (Hon.)	Greenville	*Starling, W. P., GP	Roseboro
Royster, S. S., (Hon.)	Shelby	Slate, J. E.	High Point	*Starr, H. F.	Greensboro
Royster, T. H., OALR	Tarboro	*Slate, J. S., (Hon.),		Staton, L. R., GP	Haysville
*Ruark, R. J., ObG	Raleigh	GP	Winston-Salem	Stelling, R. N.	Greensboro
Rubin, A. S.	Greensboro	*Slate, J. W.	High Point	Stenhouse, H. M., Oph	Goldsboro
Rucker, A. A.,		*Slate, M. L.	High Point	Stephenson, A. L.,	
(Hon.)	Rutherfordton	Slate, W. C., (Hon.)	Spencer	GP	Winston-Salem
Rude, J. C.	Durham	Sloan, A. B., GP	Mooreville	*Stevens, H. W.	Jacksonville
Rudisill, J. D., S	Lenoir	*Sloan, D. B., OALR	Wilmington	Stevens, J. B., I	Greensboro
Ruffin, J. M., I	Durham	*Sloan, H. L., Oph	Charlotte	Stewart, D. N.	Hickory
*Russell, C. R.	Granite Falls	Sloan, W. H., GP	Garland	*Stimpson, R. T., PH	Raleigh
Russell, J. M., GP	Canton	Sloan, W. S., I	Wilson	Stone, G. E.	King

* Present at 1941 meeting.

Name	Address	Name	Address	Name	Address
Stone, M. L., GP	Rocky Mount	*Terry, J. R., Pd	Lexington	Wannamaker, E. J., Jr.,	I
*Stone, R. E.	Chapel Hill	Thaxton, B. A.	Roxboro		Charlotte
Street, C. A., Pd	Winston-Salem	*Thelen, Christine	Greensboro	Ward, J. E., (Hon.),	GP
*Street, M. E., (Hon.), T.	Glendon	Thigpen, H. G.	Scotland Neck		Robersonville
Stretcher, R. H.,	GP	*Thomas, C. D., Tb	Sanatorium	*Ward, J. LaB., Pd	Asheville
	Waynesville	Thomas, J. G.	Greensboro	Ward, N. E., GP	Greenville
Strickland, A. T.	Wilson	*Thomas, W. L., ObG	Durham	Ward, V. A.	Robersonville
Strickland, E. F., (Hon.),	GP	*Thomas, W. N., S	Oxford	Ward, W. C.	Raleigh
	Winston-Salem	Thompson, C. A., GP	Sparta	*Ward, W. T., GP	Raleigh
Strickland, E. L., Pd	Wilson	*Thompson, C. D., (Hon.),	U	Warfield, M. C., Pd	Blowing Rock
Strickland, H. G.	Greensboro		High Point	*Warren, R. F.	Prospect Hill
*Strickland, W. M.	Wendell	*Thompson, H. A., Or	Raleigh	Warrick, L. A.	Goldsboro
Stringfield, S. L., (Hon.),	GP	*Thompson, H. C.	Shelby	Warwick, H. C.	Greensboro
	Waynesville	Thompson, J. W.	Creedmoor	Washburn, B. E.,	PH
*Stringfield, Thomas, (Hon.),	GP	*Thompson, S. R., U	Charlotte		Rutherfordton
	Waynesville	*Thompson, S. W.	Morehead City	Washburn, C. Y.,	GP
Stringfield, Thomas, Jr.,	GP	Thorpe, A. T.	Rocky Mount		Mooresboro
	Waynesville	Thurston, Asa, GP	Taylorsville	Washburn, J. M.	Lake Lure
*Strosnider, C. F., I.	Goldsboro	*Tice, W. T.	High Point	Watkins, F. B., (Hon.),	Psy
Stroupe, A. U., Jr.	Mount Holly	Tillery, J. G., GP	Enfield		Morganton
Strowd, W. A., (Hon.),	GP	Todd, L. C., CP	Charlotte	*Watkins, G. T., Jr., GP	Durham
	Durham	*Townsend, R. G., GP	St. Pauls	*Watkins, W. M., GP	Durham
*Suiter, W. G.	Weldon	Trent, J. C.	Durham	Watson, H. A.	Greensboro
Suitt, R. B., Psy	Baltimore, Md.	Triplett, W. R.	Purlear	*Watson, James, Psy	Raleigh
Sullivan, D. J., NP	Asheville	Trotter, F. O.,	GP	Watson, P. S.	Madison
Summerlin, Harry,	GP		Hendersonville	*Watson, T. M., Pd	Greenville
	Laurinburg	Troutman, B. S.	Lenoir	Weathers, Bahnson,	S
*Summerville, W. M.,	CP	Troxler, R. M.	Burlington		Roanoke Rapids
	Charlotte	Tucker, E. V.	Grifton	Weathers, B. G.	Stanley
*Sumner, E. A., S	High Point	*Tuggle, Alan	Charlotte	*Weathers, R. R., GP	Knightdale
*Sumner, G. H., PH	Asheboro	*Turner, H. G., S	Raleigh	Weaver, W. J., (Hon.),	Pr
Sutton, C. W., (Hon.)	Richlands	Turrentine, K. P., I	Kinston		Asheville
Sutton, W. G.,	(Hon.)	Tuttle, A. F., (Hon.)	Spray	*Webb, Alexander, Jr., S	Raleigh
	Seven Springs	Tuttle, R. G.	Winston-Salem	Webb, W. P., (Hon.)	Rock'ngham
Swann, C. C., OALR	Asheville	Tydemann, F. W. L.	San Francisco, Cal.	Weinstein, M. H., GP	Fairmont
Swann, J. F., (Hon.)	Kannapolis		San Francisco, Cal.	Weinstein, R. L., GP	Fairmont
*Sweeney, H. M., S	Durham	Tyndall, R. G., S	Kinston	Weizenblatt, Sprinza,	Oph
Swindell, L. H.	Washington	*Tyner, C. V., S	Leaksville		Asheville
Sykes, C. L., GP	Pilot Mountain	Tyson, J. J.	Alexandria, Va.	Welton, D. G.	Charlotte
*Sykes, J. V.	Rocky Mount	*Tyson, T. D., (Hon.), Pr	Mebane	Wessell, J. C., (Hon.),	GP
*Sykes, R. J., PH	Raleigh	Tyson, W. W.	Mebane		Wilmington
Sykes, R. P.	Asheboro	*Ulloth, G.	Ansonville	West, B. C., Pd	Kinston
Symington, John, PH	Carthage	*Umphlet, T. L., I	Raleigh	West, C. F., GP	Kinston
Talley, J. S., GP	Troutman	Underwood, M. K.	Belhaven	*West, L. N., OALR	Raleigh
Tally, B. T., GP	Albemarle	Upchurch, R. T.	Henderson	West, R. M., (Hon.)	Salisbury
*Tankersley, J. W., (Hon.),	S	Upchurch, T. G., GP	Smithfield	Westmoreland, J. R., GP	Canton
	Greensboro	Uteley, H. G.	Gastonia	Whaley, J. D., U	Hickory
Tate, W. C., S	Banner Elk	Uteley, H. H., (Hon.), GP	Benson	*Wharton, Watson, GP	Smithfield
*Tayloe, J. C., Ob	Washington	Valk, A. deT., S	Winston-Salem	*Wheeler, J. H.	Henderson
Tayloe, Joshua, II,	S	Vann, H. M.	Winston-Salem	*Whelpley, F. L., Psy	Goldsboro
	Washington	Vann, J. R., GP	Spring Hope	Whichard, M. P., PH	Murphy
*Taylor, A. D.	Charlotte	Vaughan, E. W., I&A	Greensboro	Whicker, M. E.	China Grove
Taylor, C. W.	Fort Dix, N. J.	*Vaughan, J. C.	Rich Square	*Whims, H. C.	Newton
Taylor, E. H. E., P.	Morganton	Vaughan, R. H., GP	Edenton	Whisnant, A. M., (Hon.),	OALR
*Taylor, F. R., I	High Point	*Vaughan, W. W., R	Durham		Charlotte
Taylor, F. V., OALR	Murphy	*Verdery, W. C., Pd	Fayetteville	*Whitaker, J. A.	Rocky Mount
Taylor, G. W., (Hon.),	S	Verner, C. H., Pd	Forest City	Whitaker, P. F., I	Kinston
	Mooresville	*Vernon, J. W., Psy	Morganton	Whitaker, R. B., GP	Whiteville
Taylor, H. C.	Charlotte	Vestal, W. J., (Hon.),	Pd		Kernersville
*Taylor, J. N., (Hon.)	Greensboro		Lexington	White, C. H.	Henderson
Taylor, J. T., (Hon.),	I	Wadsworth, H. B.	New Bern	White, Eustace	Kannapolis
	Greensboro	Walker, E. P.	Wilmington	White, F. W. M.	Halifax
Taylor, R. W.	Oxford	Walker, E. T.	Williamston	White, R. A., Ob	Asheville
Taylor, S. R., OALR	Greensboro	*Walker, H. D.,	(Hon.)	White, T. P., I	Charlotte
*Taylor, V. W., Jr.	Madison		Elizabeth City	White, W. H. C., S	Elizabeth City
Taylor, W. I., (Hon.),	GP	Walker, J. B.	Burlington	*Whitehead, S. L., D	Asheville
	Burgaw	*Walker, L. K.	Ahoskie	*Whittington, C. T.,	S
Taylor, W. L., (Hon.)	Oxford	Walker, R. J., Jr., GP	Snow Hill		Greensboro
*Teasdale, L. R.	Charlotte	*Wall, R. L., OALR	Raleigh	*Whittington, J. B., (Hon.),	S
*Temple, R. H., I	Kinston	*Wall, R. L., Anes	Winston-Salem		Winston-Salem
Templeton, J. Y.,	GP	*Wall, W. S., GP	Rocky Mount	Whittington, W. W., (Hon.),	GP
	Mooresville	Wallin, L., PH	Wadesboro		Snow Hill
Tennent, G. S., (Hon.),	Oph	*Walters, C. M., (Hon.)	Burlington	Wileox, J. W., (Hon.),	Tb
	Asheville	Walton, C. L., Ob	Glen Alpine		West End

* Present at 1941 meeting.

Name	Address	Name	Address	Name	Address
*Wilkerson, A. L., GP	Raleigh	Willis, B. C., S.	Rocky Mount	*Woodard, C. A., (Hon.),	Wilson
Wilkerson, C. B., (Hon.),	S	*Willis, C. A.	Candler	S	Wilson
S	Raleigh	Willis, H. C.	Wilson	*Woodhall, Barnes, NS.	Durham
Wilkerson, J. B.	Brevard	*Wilson, Frank, Jr., S.	Raleigh	Woodson, C. W., (Hon.)	Salisbury
*Wilkes, M. B., GP	Laurinburg	Wilson, N. G.	Madison	Woody, Austin	Tryon
*Wilkins, J. C.	Haw River	Wilson, R. B.	Asheville	*Wooten, F. P.	Kinston
Wilkins, J. W.	Mount Olive	Wilson, S. A.	Alexandria, La.	Wooten, W. L., S.	Greenville
*Wilkins, R. B., OALR	Durham	Wilson, S. G.	Angier	*Wrenn, G. C., GP	Siler City
Wilkins, S. A., (Hon.)	Dallas	Wilson, W. G., GP	Smithfield	Wright, J. B., (Hon.),	ALR
Wilkinson, R. W., Jr.	Wake Forest	*Winkler, Harry, Or	Charlotte	ALR	Raleigh
Williams, A. F., (Hon.)	Wilson	Winstead, E. G.	Belhaven	Wright, J. E., GP	Macesfield
*Williams, C. F., Pd.	Raleigh	*Winstead, J. L., S.	Greenville	Wright, J. R., OALR	Raleigh
Williams, E. J.	Monroe	*Winston, P. H.	Clarksville, Va.	Wright, O. E.	Winston-Salem
Williams, J. D.,	(Hon.)	*Wisely, M. R.	Fort Jackson, S. C.	Wyatt, A. T.	Lillington
(Hon.)	Guilford Station	Wiseman, P. H.	Avondale	Wyatt, Wortham,	D
Williams, J. D., Jr.	Stokesdale	Wishart, W. E.	Charlotte	D	Winston-Salem
*Williams, J. H., PH	Clinton	*Wolfe, H. C., OALR	Greensboro	Wylie, W. deK., I.	Winston-Salem
Williams, J. M.	Warsaw	Wolfe, R. V., GP	Winston-Salem	Yarbrough, F. R., ALR	Cary
*Williams, J. W., PH	Williamston	Woltz, J. L.	Mount Airy	Yarbrough, R. F., (Hon.),	PH
Williams, L. L.	Spruce Pine	Wood, Frank, S.	Marion	PH	Louisburg
*Williams, L. P.	Edenton	*Wood, G. T., S.	High Point	*Yoder, P. A., Tb.	Winston-Salem
Williams, W. N., GP	Tabor City	Wood, H. E., Tb.	Black Mountain	York, A. A., (Hon.)	High Point
Williamson, R. M.	Tabor City	Wood, Martha	Marion	Young, G. McD.	Postell
Willis, A. P., (Hon.)	Candler	Woodard, A. G., (Hon.),	OALR	*Young, R. F., PH	Halifax
			Goldsboro	Yow, I. A.	Concord
			Kenly	Zealy, A. H., Jr.	Goldsboro
				Zimmerman, R. U.,	(Hon.)
					Welcome

* Present at 1941 meeting.

ROSTER OF FELLOWS FOR 1941

By Counties

NOTE. Every physician in the state whose name we could not secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State license and date State Society was joined. A few did not take advantage of this opportunity. Any one finding an error should report it to the Secretary of the Society.

ALAMANCE-CASWELL COUNTIES SOCIETY

Name and Address	Licensed	Joined State Society
President: Smith, F. L., Burlington; Univ. of Pittsburgh, 1927	1927	1928
Secretary: Cook, W. E., Mebane; Wash. Univ. 1930; U.N.C.	1930	1934
Anderson, Charles Alexander, Burlington, (Hon.); Coll. P. & S., Balt., 1893	1893	1896
Bell, F. O., Burlington; Atlanta Med. Coll., 1918	1921	1928
Braddy, W. H., Burlington; Univ. of N. C., 1909	1909	1913
Brooks, R. E., Burlington; Jeff. Med. Coll., 1920; U.N.C.	1920	1922
Carlvle, J. B., Burlington; Jeff. Med. Coll. 1926; U. N. C.; Wake Forest 1924	1926	1928
Carrington, Geo. L., Burlington; Johns Hopkins, 1920; U.N.C.	1920	1925
Ellington, A. J., Burlington; Columbia Univ., 1915; Wake Forest	1915	1917
Goley, Willard Coe, Graham; Univ. of Pa., 1924; U.N.C.	1924	1926
Greene, Phares Yates, Burlington; Northwestern Univ., 1932; Wake Forest	1932	1934
Gwyn, H. L., Yanceyville; Med. Coll. of Va., 1923	1923	1925
Harden, Boyd, Burlington; Univ. of Pa. 1928	1931	1931
Harden, Graham, Burlington; Univ. of Pa., 1919	1920	1922
Harper, F. T., Jr., Burlington; Med. Coll. of Va. 1934; U. N. C.	1934	1936
Johnson, Joseph L., Graham; Jeff. Med. Coll., 1926	1926	1930
Lupton, C. C., Burlington; Temple Univ., 1931; U.N.C.	1931	1934
Malloy, S. A., Yanceyville (Hon.); Kv. School of Med., 1897	1898	1903
McDade, B. B., Burlington; Univ. of Md., 1918; U.N.C.	1918	1920
McPherson, C. W., Burlington; Univ. of Md., 1910; U.N.C.	1910	1912
Montgomery, Harry M., Burlington (Hon.); N. C. Med. Coll., 1903	1903	1904
Moore, Henry Blanchard, Graham; Jeff. Med. Coll., 1920; Wake Forest	1920	1923
Pickett, John A., Burlington (Hon.); Univ. of Tenn. Coll. of Med., 1894	1894	1904
Robinson, D. E., Burlington; Harvard Med. Coll. 1927	1929	1930
Scott, S. F., Union Ridge; Univ. of Pa., 1918; U.N.C.	1918	1920
Simmons, A. W., Burlington; Jeff. Med. Coll. 1939	1939	1940
Simpson, H. H., Elon; Univ. of Md., 1925	1925	1926
Spoon, S. C., Burlington; Univ. of Md., 1918; U.N.C.	1918	1920
Troxler, R. M., Burlington; Univ. of Md., 1914	1914	1915
Tyson, T. D., Mebane (Hon.); Univ. Coll. of Med., Va., 1899	1899	1904
Tyson, Woodrow W., Mebane; Med. Coll. of Va., 1935	1935	1938

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Walker, J. B., Burlington; Med. Coll. of Va., 1914; U. N. C.	1914	1916
Walters, Charles Manley, Burlington (Hon.); Univ. of Md. and Coll. of P. & S., Balt., 1908; U.N.C.	1908	1909
Warren, R. F., Prospect Hill; Atlanta School of Med., 1911	1911	1920
Wilkins, J. C., Haw River; Univ. of Md., 1911; U.N.C.	1911	1920

ALEXANDER—SEE IREDELL-ALEXANDER

ALLEGHANY—SEE WILKES-ALLEGHANY

ANSON COUNTY SOCIETY

President: Sorrell, F. Y., Wadesboro; Jeff. Med. Coll., 1930; Wake Forest	1930	1933
Secretary: Kress, J. H., Wadesboro; Med. Coll. of Va., 1936	1938	1939
Allen, Chas. I., Wadesboro; Col. Univ. Coll. of P. & S. 1913; Wake Forest, 1911	1913	1922
Bennett, Jos. H., Wadesboro (Hon.); Univ. of Md., 1894	1894	1904
Carter, W. D., Wadesboro; S. C. Med. Coll., 1934	1935	1936
Covington, J. M., Wadesboro; Medico Chirurgical Col. Phila. 1899; U. N. C.	1899	1904
Davis, J. M., Wadesboro; Columbia Univ., 1913; Wake Forest	1913	1920
Kress, Esta L., Wadesboro; Med. Coll. of Va., 1935	1938	1939
Ulloth, G., Ansonville; Col. of Med. Evans., 1932	1939	1941
Wallin, L., Wadesboro; Univ. of Tenn. Med. Coll., 1909	1909	1938

ASHE—SEE WATAUGA-ASHE

AVERY COUNTY SOCIETY

President: Fink, Emma S., Crossnore; Vanderbilt, 1936	1938	1938
Secretary: Brown, J. A., Banner Elk; Tulane 1934; U. N. C.	1934	1938
Rurleson, W. B., Plumtree; Univ. of Md., 1915; U.N.C.	1915	1916
Sloop, Eustace H., Crossnore (Hon.); N. C. Med. Coll., 1905; Jeff. Med. Coll., 1908	1905	1907
Tate, W. C., Banner Elk; Tenn. Med. Coll., 1908	1909	1912

BEAUFORT COUNTY SOCIETY

President:		
Secretary: Underwood, M. K., Belhaven; Med. Coll. of Va., 1937	1937	1939
Bonner, J. B., Aurora; Univ. of Md.; Coll. of P. & S., 1918; U.N.C.	1918	1920
Ford, D. E., Washington; Univ. of Mich., 1908	1924	1925
Hackler, R. H., Washington; Jeff. Med. Coll., 1926	1926	1928
Mariner, N. B., Belhaven (Hon.); Univ. Coll. of Med., Va., 1903	1903	1904
Nicholson, P. A., Washington (Hon.); P. & S., Balt., 1889	1889	1890
Peters, A. R., Washington; Univ. of Ga. 1935	1938	1939
Ramsay, Jas. G., Washington; Univ. of Pa., 1922; U.N.C.	1924	1924
Spiegle, C. H., Grimesland		1941
Swindell, L. H., Washington; Univ. of Pa. 1916; U. N. C.	1916	1919
Tayloe, John Cotton, Washington; Univ. of Pa., 1922; U.N.C.	1924	1925
Tayloe, Joshua, II, Washington; Univ. of Pa., 1923; U.N.C.	1923	1926
Winstead, Ellis G., Belhaven; Med. Coll. of Va., 1929	1929	1930

BERTIE COUNTY SOCIETY

President: Norfleet, E. P., Roxobel; Med. Coll. of Va. 1914	1914	1920
Secretary: Jordan, W. P., Windsor; Univ. of Md., 1935	1935	1939
Castelloe, Cola, Windsor; Univ. of Pa., 1917; U.N.C.	1917	1926
Credle, C. S., Colerain; Med. Coll. of Va. 1932	1932	1941
Garriss, F. H., Lewiston; Jeff. Med. Coll. 1912	1912	1918
Saunders, Sheldon A., Aulander; Jeff. Med. Coll., 1914	1914	1918
Smith, Joseph Elmer, Windsor; Med. Coll. of Va., 1921	1921	1922

BLADEN COUNTY SOCIETY

President: Hutchinson, S. S., Bladenboro; N. C. Med. Coll. 1911	1911	1917
Secretary: Glenn, Channing, Elizabethtown; Med. Coll. of Va., 1933	1936	1939
Bennett, E. C., Elizabethtown; Med. Coll. of Va., 1926	1926	1927
Bridger, D. H., Bladenboro; Jeff. Med. Coll., 1922	1922	1925
Clark, D. D., Clarkton; Med. Coll. of Va., 1917	1917	1920
Cromartie, R. S., Elizabethtown (Hon.); N. C. Med. Coll., 1900	1900	1906
Singletary, G. C., Clarkton; Univ. of Pa., 1917	1917	1918

BRUNSWICK COUNTY SOCIETY

BUNCOMBE COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Ambler, A. C., Asheville; Jeff. Med. Coll. 1920; U. N. C.	1921	1922
Secretary: Carr, Eugene M., Asheville; Johns Hopkins Univ. 1919....	1926	1927
Anderson, J. B., Asheville; Univ. of Md., 1935.....	1935	1938
Archer, Isaac J., Black Mountain (Hon.); Northwestern Univ., 1896....	1905	1907
Barrier, H. W., Black Mountain; Chicago Med. School, 1921	1931	1936
Beall, L. G., Black Mountain (Hon.); N. C. Med. Coll., 1906; Univ. of Pa., 1911	1906	1906
Belcher, C. C., Asheville; Tulane, 1930.....	1939	1940
Bittinger, S. M., Black Mountain; George Washington Univ., 1918.....	1924	1924
Bliss, Forrest E., Fletcher; Coll. of Med. Evangelists, 1933	1933	1934
Brewton, W. A., Fort Jackson, S. C.; Wake Forest 1925; Univ. of Pa. 1927	1927	1929
Brookshire, Harley G., Asheville (Hon.); N. C. Med. Coll., 1905.....	1905	1906
Brown, Kermit E., Asheville; Jeff. Med. Coll., 1927.....	1927	1930
Brownsberger, Ethel, Biltmore; Coll. of Med. Evangelists, 1927.....	1933	1934
Brownsberger, John F., Fletcher; Coll. of Med. Evangelists, 1925.....	1928	1929
Buckner, J. M., Swannanoa; Univ. of N. C., 1909.....	1909	1912
Burton, C. N., Asheville; Univ. of Cincinnati, 1936.....	1938	1938
Chapman, E. J., Asheville; Northwestern Univ., 1928.....	1939	1940
Cherry, J. H., Asheville		1941
Clark, Harold S., Asheville; Univ. of Pa., 1922; U.N.C.....	1922	1924
Coeke, Charles Hartwell, Asheville; Cornell Univ., 1905.....	1912	1913
Coeke, Jere E., Asheville (Hon.); Louisville Med. Coll., 1905.....	1905	1906
Cooley, S. S., Black Mountain; Univ. of Bellevue Hosp., N. Y. City, 1934	1938	1938
Craddock, Alva B., Asheville; Johns Hopkins, 1918.....	1923	1924
Crow, S. L., Asheville; Emory Univ., 1925.....	1926	1927
Crump, C. L., Asheville; Baylor Univ., 1930.....	1935	1936
Crump, Curtis, Asheville; Harvard, 1926.....	1933	1934
Eckel, O. F., Asheville (Hon.); Med. Coll. of S. C., 1906.....	1907	1908
Edwards, B. O., Asheville (Hon.); N. C. Med. Coll., 1905.....	1905	1909
Elias, Lewis W., Asheville (Hon.); Columbia Univ., Coll. of P. & S., 1903	1906	1906
Feldman, Leon H., Asheville; Univ. of Md., 1934.....	1938	1938
Freeman, Wm. T., Biltmore; Univ. of Ga., 1917.....	1927	1929
Gillespie, S. C., Asheville; Univ. of Cincinnati, 1931.....	1935	1936
Grantham, Wm. L., Asheville (Hon.); N. C. Med. Coll., 1906.....	1906	1908
Griffin, M. A., Asheville; Jeff. Med. Coll. 1917; U. N. C.....	1917	1918
Griffin, W. R., Asheville; Jeff. Med. Coll. 1910.....	1910	1919
Griffith, F. Webb, Asheville; Johns Hopkins, 1906.....	1911	1912
Griffith, L. M., Asheville; Johns Hopkins, 1915.....	1916	1918
Henderson, Irma C., Asheville, Tulane, 1933.....	1934	1935
Hensley, Chas. A., Asheville; Jeff. Med. Coll., 1917; Wake Forest, 1915	1917	1927
Herbert, Wm. P., Asheville, Univ. of Va., 1907.....	1910	1911
Hollyday, W. M., Asheville; Univ. of Md., 1908.....	1914	1915
Huffines, T. R., Asheville; Indiana Univ., 1919.....	1922	1924
Huston, John Walter, Asheville; Rush Med. Coll., 1904.....	1912	1913
Ingersoll, Louise M., Asheville; Woman's Med. Coll., 1914.....	1915	1917
Ivey, R. R., Asheville; Univ. of Ala., 1909.....	1921	1921
Johnson, Walter R., Asheville; Univ. of Minnesota, 1924.....	1933	1934
Justice, Wm. S., Asheville; Harvard Univ. 1926; U. N. C.....	1930	1931
Knoefel, A. E., Jr., Black Mountain; La. Univ. School of Med., 1935....	1935	1938
Lord, Marjory J., Montreat; Univ. of Mich., 1916.....	1918	1919
Lott, Wm. Clifton, Asheville; Univ. of Colorado, 1929.....	1930	1931
MacRae, J. D., Asheville; Univ. of Pa., 1927; U.N.C.....	1927	1930
Matros, Nathaniel H., Oteen; Marquette Univ., 1930.....	1933	1934
McCracken, C. M., Fairview (Hon.); N. C. Med. Coll., 1896.....	1896	1904
McCracken, M. H., Asheville; Univ. of Louisville 1930.....	1930	1940
McGowan, J. F., Asheville; Univ. of Md. & Coll. of Phys. & Surgs., 1929	1937	1939
Mears, George A., Asheville; Syracuse Univ., 1924; Wake Forest, 1922	1924	1927
Meriwether, Benj. Morsell, Asheville; Univ. of Louisville, 1915.....	1915	1924
Moore, Julian A., Asheville; Univ. of Pa., 1918; U.N.C.....	1918	1921
Morgan, B. E., Asheville; Univ. of Tenn., 1917.....	1921	1922
Morgan, G. A., Asheville; Univ. of Tenn., 1917.....	1920	1926
Murphy, Gibbons W., Asheville; Emory Univ., 1923.....	1923	1927
Norburn, Chas. S., Asheville; Univ. of Va., 1917; U.N.C.....	1921	1924
Norburn, R. L., Asheville; Vanderbilt Univ., 1925.....	1925	1927
Ormond, A. L., Black Mountain; Jeff. Med. Coll., 1930.....	1930	1935
Orr, Charles C., Asheville (Hon.); Univ. of Md., 1904; U.N.C.....	1904	1905
Orr, Porter B., Asheville (Hon.); Jeff. Med. Coll., 1901; U.N.C.....	1901	1904
Reeves, R. J., Leicester; Vanderbilt Univ., 1913.....	1913	1922
Richardson, Frank H., Black Mountain; Cornell Univ., 1906.....	1919	1920

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Ringer, Paul H., Asheville (Hon.); Columbia Univ., Coll. of P. & S., N. Y., 1904	1906	1907
Russell, W. M., Asheville; Univ. of Cincinnati, 1928	1931	1932
Saunders, John T., Asheville; Columbia Univ., 1926	1934	1935
Schaffle, Karl, Asheville; Univ. of Pa., 1907	1926	1927
Schoenheit, E. W., Asheville; Jeff. Med. Coll., 1920	1920	1921
Sevier, J. T., Asheville (Hon.); Jeff. Med. Coll., 1895	1895	1899
Sisk, W. N., Asheville; Univ. of Wisc., 1935	1940	1940
Smith, B. R., Asheville; Jeff. Med. Coll., 1911	1913	1914
Sprinkle, C. N., Weaverville; Jeff. Med. Coll., 1910; U.N.C.	1910	1922
Suitt, R. B., Baltimore, Md.; St. Louis Univ., 1932	1933	1938
Sullivan, D. J., Asheville; Temple Univ., 1934	1940	1940
Swann, C. C., Asheville; Tulane, 1926	1930	1931
Tennent, G. S., Asheville (Hon.); N. C. Med. Coll., 1894	1894	1898
Ward, John LaB., Asheville; Med. Coll. of S. C., 1905	1921	1922
Weaver, W. J., Asheville (Hon.); Jeff. Med. Coll., 1898; U.N.C.	1897	1903
Weizenblatt, Sprinza, Asheville; Viennese Univ. of Med., 1922	1929	1931
White, R. A., Asheville; Univ. of Cincinnati, 1918	1920	1921
Whitehead, S. L., Asheville; Jeff. Med. Coll., 1921; Wake Forest, 1919	1921	1929
Willis, A. P., Candler; (Hon.); Univ. of N. C., 1904	1904	1906
Willis, C. A., Candler; Duke Univ., 1936	1938	1938
Wilson, R. B., Asheville; Univ. of Louisville, 1931	1933	1933
Wood, H. E., Black Mountain; Emory 1922	1938	1939

BURKE COUNTY SOCIETY

President:

Secretary: Barbour, Edith Goodwin, Morganton; Woman's Coll. of Pa., 1932	1934	1934
Achard, Lucien, Morganton; R. Univ. of Naples (Italy), 1895	1929	1930
Billings, G. M., Morganton; Tulane Univ. of Louisiana Sch. of Med., 1919	1919	1920
Blumberg, Alfred, Morganton; Univ. of Colo., 1923	1928	1929
Ervin, John W., Morganton; Med. Coll. of Va., 1933; U.N.C.; Wake Forest	1935	1936
Garrard, R. L., Morganton		1941
Helms, J. Bivens, Morganton; Univ. of Pa., 1928; Wake Forest, 1926	1928	1931
Kende, T. Norbert, Augusta, Ga.; Royal Hungarian Univ., Budapest, Hungary, 1922	1927	1928
Kirksey, James J., Morganton; Univ. of Pa., 1921; U.N.C.	1921	1923
Long, R. H., Morganton; Jeff. Med. Coll., 1916; U.N.C.	1916	1923
McC Campbell, John, Morganton (Hon.); Balt. Med. Coll., 1894	1895	1899
McKee, John S., Jr., Morganton; Univ. of Pa., 1929; U.N.C.	1929	1936
Oehlbeck, L. W., Morganton; Univ. of Rochester, 1930	1939	1939
Palmer, Yates, S., Valdese; Med. Coll. of Va., 1931	1931	1933
Patton, W. H., Jr., Morganton; Univ. of Pa., 1937	1937	1940
Phifer, Edward W., Morganton (Hon.); N. C. Med. Coll., 1902	1902	1904
Riddle, J. B., Morganton (Hon.); Vanderbilt Univ., 1898	1904	1904
Saunders, John Rudolph, Morganton; Emory Univ., 1926; Wake Forest, 1924	1926	1931
Taylor, E. H. E., Morganton; Tulane, 1924; Wake Forest, 1922	1924	1925
Vernon, James W., Morganton; Jeff. Med. Coll., 1909; Wake Forest, 1907	1909	1913
Walton, C. L., Glen Alpine; Med. Coll. of Va., 1931	1931	1933
Watkins, Fonso B., Morganton (Hon.); Jeff. Med. Coll., 1907; U.N.C.	1907	1910

CABARRUS COUNTY SOCIETY

President: Buchanan, S. E., Concord; Univ. of Md., 1912	1912	1914
Secretary: Monroe, Lance T., Kannapolis; N. Y. Univ., 1932	1937	1938
Barnhardt, A. E., Kannapolis; Univ. of Md., 1933	1933	1941
Bowman, C. R., Kannapolis; Med. Coll. of Va., 1928	1929	1930
Brandon, W. O., Concord; Med. Coll. Va., 1928	1929	1932
Burns, J. E., Concord; Med. Coll. of Va., 1923	1923	1928
Craven, Fred T., Concord; N. Y. Univ., 1938	1938	1940
King, Richard M., Concord (Hon.); Jeff. Med. Coll., 1903	1903	1906

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Lubchenko, N. E., Harrisburg; N. C. Med. Coll., 1915.....	1915	1916
Morris, Rae H., Concord; Jeff. Med. Coll., 1929.....	1929	1932
Nolan, J. O., Kannapolis; Jeff. Med. Coll. 1921.....	1921	1922
Scruggs, W. H., Concord; Univ. of Md. 1913.....	1915	1917
Smoot, J. E., Concord (Hon.); Balt. Med. Coll., 1893.....	1894	1902
Swann, Jos. F., Kannapolis (Hon.); P. & S., Balt., 1896.....	1896	1904
White, Eustace, Kannapolis; Tulane 1926	1926	1940
Yow, I. A., Concord; N. C. Med. Coll., 1906.....	1906	1910

CALDWELL COUNTY SOCIETY

President: Kent, Alfred A., Jr., Granite Falls; Univ. of Pa., 1931.....	1931	1934
Secretary: Hamer, Douglas, Jr., Lenoir; Med. Coll. of S. C., 1927; U.N.C.	1927	1930
Blackwelder, Verne H., Lenoir; Univ. of Pa., 1929; U.N.C.....	1929	1931
Byerly, Wesley Grimes, Lenoir; Med. Coll. of Va., 1924.....	1924	1925
Corpening, O. J., Granite Falls (Hon.); Univ. Coll. of Med., 1906.....	1906	1906
Dula, Frederick M., Lenoir; Vanderbilt Univ., 1932; U.N.C.....	1934	1934
Fetner, L. M., Lenoir; N. C. Med. Coll., 1914.....	1914	1938
Goodman, A. B., Lenoir (Hon.); N. C. Med. Coll., 1898.....	1897	1904
Hagaman, L. D., Lenoir; Univ. of Pa. 1936; Wake Forest.....	1936	1938
Hebrick, Clyde R., Lenoir; Georgetown Med. School, 1925; U.N.C.....	1925	1926
Kent, Alfred A., Winter Park, Fla. (Hon.); Jeff. Med. Coll., 1885.....	1885	1894
Lore, Ralph, Lenoir; Rusn Med. Coll., 1932.....	1933	1937
McNairy, Caroline, Lenoir; Woman's Med. Coll. of Pa., 1917.....	1917	1919
Rudisill, J. D., Lenoir; Univ. of Md., 1922.....	1922	1923
Russell, C. R., Granite Falls; Univ. Coll. of Med., 1909; U.N.C.....	1909	1918
Troutman, B. S., Lenoir; Univ. of Md., 1936.....	1936	1939
Warheid, Mary Cabell, Blowing Rock; woman's Med. Coll. of Pa., 1922	1928	1935

CAMDEN—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

CARTERET COUNTY SOCIETY

Bonner, K. P. B., Morehead City (Hon.); Med. Coll. of Va., 1905; U.N.C.	1905	1905
Hyde, Frank, Beaufort; West. Res. Univ. 1920.....	1925	1926
Royal, Ben F., Morehead City; Jen. Med. Coll., 1909; U.N.C.....	1909	1912
Thompson, S. W., Morehead City; Med. Coll. of Va. 1913; U. N. C.....	1915	1922

CASWELL—SEE ALAMANCE-CASWELL

CATAWBA COUNTY SOCIETY

President:		
Secretary: Hambrick, Robt. T., Hickory; Tulane, 1923; U.N.C.....	1923	1924
Barnes, H. E., Hickory; Univ. of Md., 1935.....	1935	1938
Fresh, W. M., Hickory; Medico-Chirurgical Coll. of Phila., 1906.....	1913	1919
Fritz, William A., Hickory; Temple Univ., 1933.....	1933	1934
Frye, Glenn R., Hickory; Jeff. Med. Coll., 1921; U.N.C.....	1921	1923
Hunsucker, Chas. R., Hickory; N. C. Med. Coll., 1913.....	1913	1920
Lewis, J. S., Hickory; Med. Coll. of S. C. 1925.....	1927	1932
Menzies, H. C., Hickory (Hon.); N. C. Med. Coll., 1894.....	1894	1899
Menzies, H. H., Hickory; Med. Coll. of Va. 1923.....	1923	1926
Nowell, S. C., Hickory; Univ. of Pa., 1921.....	1922	1924
Stewart, Dan N., Hickory; Univ. of Pa., 1935.....	1935	1938
Whaley, James D., Hickory; Med. Coll. of S. C., 1925.....	1927	1936
Whims, H. C., Newton; Univ. of Md., 1931.....	1931	1933

CHATHAM COUNTY SOCIETY

President: Mathieson, K. M., Pittsboro; Coll. of Med. Evangelists 1937	1938	1939
Secretary: Earle, J. B., Siler City; Med. Coll. of Va., 1935.....	1935	1938
McBane, T. W., Pittsboro; Med. Coll. of Va., 1927.....	1927	1929
Patman, W. L., Siler City; Harvard, 1921.....	1923	1926
Rogers, G. W., Chapel Hill; Birmingham Med. Coll. 1911.....	1937	1941
Wrenn, G. C., Siler City; Med. Coll. of S. C., 1937.....	1937	1939

CHEROKEE COUNTY SOCIETY

President: Taylor, Frank V., Murphy; N. C. Med. Coll., 1915.....	1915	1936
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<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Secretary: Miller, Harry, Murphy; Emory Univ., 1934.....	1936	1938
Heighway, S. C., Murphy (Hon.); Med. Coll. of Ohio, 1885.....	1904	1898
Hill, J. N., Murphy (Hon.); Univ. of Louisville, 1909.....	1909	1909
Hoover, William A., Murphy; Univ. of Md., 1933; Wake Forest.....	1933	1938
Morrow, W. C., Andrews; Atlanta School of Med., 1909.....	1909	1909
Parette, Nettie C., Robbinsville; Univ. of Tenn. 1934.....	1937	1941
Parette, Richard G., Andrews; Univ. of Tenn. 1934.....	1936	1941
Whichard, M. P., Murphy; Univ. of Md., 1910.....	1910	1918
Young, G. McD., Postell; Lincoln Memorial Univ., 1916.....	1917	1918

CHOWAN-PERQUIMANS COUNTIES SOCIETY

Davenport, C. A., Hertford; Univ. of Md. 1924.....	1924	1926
Powell, Jesse A., Edenton, (Hon.); Coll. of Phys. & Sur., Balt. 1907	1908	1909
Vaughan, Roland H., Edenton; Univ. of Va., 1935.....	1938	1939
Williams, L. P., Edenton; Bellevue Med. Coll. 1918.....	1919	1920
Wisely, Martin, Fort Jackson, S. C.; Univ. of Va., 1935.....	1937	1938

CLAY—SEE MACON-CLAY

CLEVELAND COUNTY SOCIETY

President: Parker, S. F., Shelby; Med. Coll. of Va., 1929.....	1929	1931
Secretary: Mitchell, Thos. B., Shelby; Univ. of Pa., 1924.....	1925	1927
Aydlette, Joseph P., Earl (Hon.); Univ. of Ky., 1901.....	1903	1903
Bridges, D. T., Lattimore, Emory Univ., 1926; Wake Forest, 1924.....	1926	1928
Falls, Fred, Lawndale; Tulane, 1930.....	1930	1933
Gibbs, E. W., Shelby; Univ. of N. C., 1907.....	1907	1918
Gold, Ben, Shelby; Univ. of Md., 1920; U.N.C.....	1921	1922
Gold, T. B., Shelby; N. C. Med. Coll., 1911.....	1911	1915
Hamrick, John, Shelby; Univ. of Md., 1935.....	1935	1940
Harbison, J. W., Shelby; Johns Hopkins, 1919; U.N.C.....	1919	1924
Hill, A. L., Kings Mountain; Univ. of Penna. 1930.....	1930	1932
Houser, E. A., Shelby (Hon.); Chattanooga Med. Coll., 1898; Balt. Univ., 1902.....	1902	1904
Kendall, B. H., Shelby; Univ. of Md., 1929; U.N.C.....	1929	1931
Lackey, W. J., Fallston; Univ. of Va., 1928.....	1928	1929
Lattimore, E. B., Shelby (Hon.); Bellevue Med. Coll., 1897.....	1896	1904
Lee, Lawrence Victor, Lattimore (Hon.); Emory Univ., 1894.....	1897	1904
Mitchell, Z. P., Shelby; Med. Coll. of Va., 1920; Wake Forest.....	1920	1921
Moore, D. F., Shelby; Jeff. Med. Coll., 1925; Wake Forest, 1923.....	1925	1927
Moore, Ernest Vick, Earl; Med. Coll. of S. C., 1933.....	1933	1938
Padgett, Chas. K., Shelby; Jeff. Med. Coll., 1930.....	1930	1934
Padgett, Philip C., Kings Mountain; Tulane, 1935.....	1936	1940
Pruitt, Sam. P., Shelby; Univ. of Md., 1916.....	1932	1941
Ramseur, W. L., Kings Mountain; Med. Coll. of S. C., 1926.....	1927	1929
Royster, S. S., Shelby (Hon.); Tenn. Med. Coll., 1891.....	1896	1904
Schenk, Sam. M., Shelby; Univ. of Pa., 1923; U.N.C.....	1923	1926
Sherrill, H. R., Shelby; Univ. of Tenn., 1926.....	1926	1927
Thompson, H. C., Shelby; Tulane, 1930; U.N.C.....	1931	1932
Washburn, C. Y., Mooresboro; Jeff. Med. Coll., 1937.....	1937	1939

COLUMBUS COUNTY SOCIETY

President: Elliott, G. D., Fair Bluff; Univ. of Pa., 1923; U. N. C.....	1923	1926
Secretary: Floyd, A. G., Whiteville; Med. Coll. of S. C., 1937.....	1937	1939
Cox, G. S., Tabor City; N. C. Med. Coll., 1911.....	1911	1914
Floyd, L. D., Fair Bluff; N. C. Med. Coll., 1911.....	1911	1912
Formyduval, T., Whiteville; Med. Coll. of Va., 1919.....	1920	1922
Greene, W. A., Whiteville; Northwestern Univ., 1934.....	1935	1936
Johnson, Floyd, Whiteville (Hon.); Memphis H. M. C., 1903.....	1903	1904
Mickley, Jack, Tabor City; Univ. of Md., 1932.....	1934	1937
Miller, W. Edwin, Whiteville; Emory Univ., 1929.....	1934	1935
Sadler, R. C., Whiteville; N. C. Med. Coll., 1912.....	1912	1915
Smith, Slade A., Whiteville; N. C. Med. Coll., 1907.....	1907	1921
Smith, W. F., Chadbourne (Hon.); N. C. Med. Coll., 1904.....	1904	1905
Whitaker, R. B., Whiteville; Univ. Coll. of Med., 1912.....	1912	1913
Williams, William N., Tabor City; Med. Coll. of Va., 1924.....	1924	1925
Williamson, Ross M., Tabor City; Univ. of Pa., 1937.....	1937	1940

CRAVEN COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President:		
Secretary: Kafer, Oscar A., New Bern; Univ. of Md., 1934.....	1934	1937
Ashford, Chas. Hall, New Bern; Johns Hopkins, 1927; U. N. C., 1925....	1927	1931
Barker, C. S., New Bern; Jeff. Med. Coll., 1909; U. N. C.....	1909	1924
Daniels, O. C., New Bern, (Hon.); Med. Coll. of Va., 1903; U. N. C....	1903	1910
Duffy, Charles, New Bern; Jeff. Med. Coll. 1930.....	1930	1935
Duffy, R. N., New Bern; Johns Hopkins, 1906.....	1907	1908
Jones, R. Duval, New Bern (Hon.); Univ. of Md., 1896; U.N.C.....	1897	1897
McGeachy, R. S., New Bern (Hon.); Bellevue Hosp., 1894.....	1894	1895
Patterson, Joseph F., New Bern (Hon.); Jeff. Med. Coll., 1906; U.N.C.	1906	1906
Pollock, Raymond, New Bern (Hon.); Jeff. Med. Coll., 1897.....	1900	1900
Wadsworth, H. B., New Bern; Johns Hopkins, 1918.....	1918	1923

CUMBERLAND COUNTY SOCIETY

President:		
Secretary: McFadyen, O. L., Fayetteville; N. C. Med. Coll., 1912.....	1912	1912
Elfman, Samuel L., Fayetteville; Med. Coll. of Va., 1935.....	1936	1937
Foster, M. T., Fayetteville; Emory Univ., 1927; Wake Forest, 1925....	1927	1930
Harry, J. M., Fayetteville; Med. Coll. Va. 1934.....	1934	1936
Highsmith, J. F., Jr., Fayetteville; Univ. of Pa., 1927.....	1927	1929
Highsmith, Seavy, Fayetteville (Hon.); Univ. Coll. of Med., 1901.....	1901	1902
Highsmith, W. C., Fayetteville; Univ. of Cincinnati, 1931; U.N.C.....	1930	1932
Lilly, James M., Fayetteville (Hon.); Univ. Coll. of Med., 1903; U.N.C.	1903	1904
McKay, W. P., Fayetteville; Tulane, 1916; U.N.C.....	1916	1921
Rainey, W. T., Fayetteville; Univ. Coll. of Med., 1913.....	1913	1916
Robertson, J. N., Fayetteville; Med. Coll. of Va., 1923.....	1923	1924
Shaw, J. A., Fayetteville; Univ. of Pa., 1923; U.N.C., 1921.....	1923	1926
Verdery, W. C., Fayetteville; Univ. of Ga., 1915.....	1920	1921

CURRITUCK—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

DARE—SEE PASQUOTANK-CAMDEN-CURRITUCK-DARE

DAVIDSON COUNTY SOCIETY

President: Bender, Jno. R., Lexington; Va. Med. Coll., 1935.....	1935	1939
Secretary: Lohr, Dermot, Lexington; Jeff. Med. Coll., 1934.....	1934	1938
Alexander, G. T., Thomasville; Emory Univ., 1922.....	1933	1934
Andrew, John M., Lexington; N. Y. Univ. and Bellevue Hosp. Med. Coll., 1932.....	1932	1934
Block, M. E., Lexington; Tulane, 1933.....	1933	1937
Cathell, E. J., Lexington; Emory Univ., 1930.....	1930	1932
Cathell, Jas. L., Lexington; Emory Univ., 1937.....	1937	1939
Clyatt, Claude Eugene, Denton; Univ. of Ga., 1911.....	1923	1924
Craven, Erle, Jr., Lexington; Johns Hopkins, 1929.....	1932	1935
Craven, Jean, Lexington; Johns Hopkins, 1930.....	1933	1935
Farrington, Joe, Thomasville; Univ. of Cincinnati, 1939.....	1939	1941
Farrington, R. K., Thomasville; Univ. of Cincinnati, 1925; U.N.C.....	1925	1927
Gambrell, Grover C., Lexington; Univ. of Ga., 1912.....	1923	1924
Griffis, J. W., Denton; Med. Coll. of Va., 1932.....	1934	1937
Hunt, W. Bryce, Lexington; Univ. of Md., 1923; Wake Forest, 1921....	1923	1924
Jennings, R. G., Thomasville; N. C. Med. Coll., 1913.....	1913	1920
Lancaster, F. J., Lexington; Jeff. Med. Coll., 1922; Wake Forest, 1920	1922	1924
Lanier, V. C., Welcome; Med. Coll. of Va., 1937.....	1937	1939
Leonard, J. C., Jr., Lexington; Jeff. Med. Coll., 1928.....	1928	1931
McDonald, R. L., Thomasville; Northwestern Univ., 1936.....	1937	1938
Mock, Frank Lowe; Lexington (Hon.); N. C. Med. Coll., 1908.....	1908	1908
Myers, H. T., Lexington; Med. Coll. of Va., 1935.....	1935	1940
Phillips, C. H., Thomasville (Hon.); Balt. Univ. School of Med., 1892	1893	1911
Redwine, J. Dan, Lexington; Emory Univ., 1931.....	1931	1934
Sharpe, C. R., Lexington; Jeff. Med. Coll., 1914; Wake Forest, 1912....	1914	1917
Sherrill, P. M., Thomasville; Vanderbilt Univ., 1931.....	1935	1937
Smith, J. A., Lexington; N. C. Med. Coll., 1915.....	1915	1917
Smith, William Gordon, Thomasville; Tulane, 1927; U.N.C.....	1927	1928
Terry, J. R., Lexington; Univ. of Louisville, 1911.....	1912	1913
Vestal, Willis Jasper, Lexington (Hon.); Coll. of P. & S., Balt., 1883	1889	1893
Zimmerman, Robert U., Welcome (Hon.); N. C. Med. Coll., 1901.....	1901	1904

DAVIE—SEE ROWAN

DUPLIN COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President:		
Secretary: Drake, B. M., Kenansville.....		1941
Ewers, Edwin P., Warsaw; Med. Coll. of Va., 1935.....	1936	1939
Farrior, J. W., Warsaw; Univ. of Pa., 1912.....	1913	1917
Gooding, Guy V., Kenansville; Tulane Univ., 1928.....	1928	1931
Hawes, C. F., Rose Hill; Northwestern Univ., 1933.....	1932	1939
Hundley, Deane, Jr., Wallace; Boston Med. Coll., 1934.....	1936	1938
Irwin, Robt. F., Magnolia.....		1941
Quinn, Robert E., Magnolia; N. C. Med. Coll., 1912.....	1913	1916
Robinson, J. D., Wallace; Univ. of Md., 1915.....	1915	1917
Williams, J. M., Warsaw; Univ. of Md., 1902.....	1902	1903

DURHAM-ORANGE COUNTIES SOCIETY

President: Powell, Albert H., Durham; Univ. of Ga., 1924.....	1925	1926
Secretary: Manning, Isaac H., Jr., Durham; Harvard Med. Coll. 1935.....	1938	1939
Alyea, Edwin P., Durham; Johns Hopkins, 1923.....	1930	1930
Anderson, C. P., Durham; Northwestern Univ., 1935.....	1937	1937
Anderson, W. B., Durham; Johns Hopkins, 1924.....	1927	1928
Arena, J. M., Durham; Duke Univ., 1932.....	1938	1939
Arnold, Ralph A., Durham; Buffaloe, 1936.....	1941	1941
Baker, Lenox D., Durham; Duke Univ., 1933.....	1937	1937
Baker, R. D., Durham; Harvard Univ., 1928.....	1934	1937
Berryhill, Walter Reece, Chapel Hill; Harvard Univ., 1927; U.N.C.....	1928	1934
Bitting, Numa Duncan, Durham (Hon.); Jeff. Med. Coll., 1907; U.N.C.....	1907	1909
Boone, W. H., Durham (Hon.); N. C. Med. Coll., 1902.....	1902	1904
Boone, W. W., Durham; Jeff. Med. Coll., 1923; U.N.C.....	1923	1925
Bowles, Francis N., Durham; Med. Coll. of Va., 1924.....	1924	1926
Bowling, Edwin Holt, Durham (Hon.); Coll. of P. & S., Balt., 1891.....	1890	1908
Brinkley, H. M., Durham; Jeff. Med. Coll., 1919; U.N.C.....	1919	1923
Brown, Clark E., Chapel Hill; Univ. of Pa., 1930.....	1940	1941
Bullitt, J. B., Chapel Hill; Univ. of Va., 1897.....	1914	1915
Callaway, J. Lamar, Durham; Duke Univ., 1932.....	1937	1937
Carroll, R. C., Durham; Univ. of Colorado, 1939.....	1941	1941
Carter, Bayard, Durham; Johns Hopkins, 1925.....	1925	1931
Cekada, Emil Bogonir, Durham; Johns Hopkins, 1929.....	1934	1934
Cooper, A. Derwin, Durham; Geo. Washington Univ., 1931.....	1933	1934
Coppridge, W. M., Durham; Jeff. Med. Coll., 1918; U.N.C.....	1919	1920
Craig, Robert Lawrence, Durham; Johns Hopkins, 1935.....	1939	1940
Crispell, R. S., Durham; Cornell Univ., 1920.....	1933	1934
Davison, Wilburt C., Durham; Johns Hopkins, 1917.....	1927	1928
Dees, John Essary, Durham; Univ. of Va., 1933.....	1940	1940
Dees, Susan Coons, Durham; Johns Hopkins, 1935.....	1939	1941
Dick, MacDonald, Durham; Johns Hopkins, 1928.....	1940	1941
Donnelly, Grant Lester, Chapel Hill; Duke Univ., 1933; U.N.C.....	1933	1935
Eagle, W. W., Durham; Johns Hopkins, 1925.....	1929	1930
Easley, Eleanor, B., Durham; Duke Univ., 1934.....	1940	1940
Erickson, C. C., Durham; Univ. of Minn., 1932.....	1940	1941
Fassett, Burton W., Durham (Hon.); Balt. Med. Coll., 1898.....	1899	1909
Ferguson, George Burton, Durham; Jeff. Med. Coll., 1932.....	1937	1938
Fields, Leonard E., Chapel Hill; Univ. of Pa., 1929; U.N.C.....	1929	1931
Finkelstein, Harold, Durham; Johns Hopkins, 1928.....	1937	1938
Fleming, Ralph Gibson, Rochester, Minn.; Univ. of Pa., 1936; U.N.C.....	1936	1938
Fleming, William Leroy, Chapel Hill; Vanderbilt Univ., 1932.....	1940	1940
Forrest, D. E., Hillsboro; Univ. of Md., 1930.....	1930	1933
Fox, Herbert J., Durham; Duke Univ., 1935.....	1940	1941
Gardner, Clarence E., Jr., Durham; Johns Hopkins, 1928.....	1932	1932
Goudge, Mabel E., Durham; Ohio State Univ. Coll. of Med., 1922.....	1925	1927
Graham, W. A., Durham; Univ. of Pa., 1932.....	1932	1937
Graves, Robert Williams, Durham; Duke Univ., 1933.....	1937	1938
Greenhill, M. H., Durham; Univ. of Chicago, 1936.....	1940	1941
Hamblen, E. C., Durham; Univ. of Va., 1928.....	1931	1931
Hanes, F. M., Durham; Johns Hopkins, 1908.....	1916	1917
Hansen-Pruss, O. C., Durham; Johns Hopkins, 1924.....	1930	1931
Hardee, W. P., Durham; Jeff. Med. Coll., 1912; U.N.C.....	1912	1924
Harrell, Geo. T., Jr., Winston-Salem; Duke Univ., 1936.....	1940	1940
Harris, Isaac E., Jr., Columbia, S. C.; Jeff. Med. Coll., 1933.....	1933	1939
Hart, Deryl, Durham; Johns Hopkins, 1921.....	1929	1930
Harton, R. A., Durham; Temple Univ., 1934.....	1935	1936
Hedgpeth, E. McG., Chapel Hill; Univ. of Pa., 1931; U.N.C.....	1931	1934
Hendrix, James Paisley, Durham; Univ. of Pa., 1930.....	1930	1939

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Henry, H. H., Durham; Tulane Univ., 1936.....	1939	1940
Hicks, Calvin S., Durham (Hon.); Univ. of Md., 1904.....	1904	1904
Holloway, Joseph C., Durham; Tulane, 1927; U.N.C.....	1928	1929
Holloway, Robert Lee, Durham (Hon.); Med. Coll. of Va., 1893.....	1893	1901
Holman, Russel L., Chapel Hill; Vanderbilt Univ., 1931.....	1938	1939
Horack, Harold M., Durham; Duke Univ., 1937.....	1939	1940
Johnston, Christopher, Durham; Johns Hopkins, 1926.....	1930	1930
Jones, Robert Randolph, Jr., Durham; Johns Hopkins, 1928.....	1933	1933
Jones, Thomas T., Durham; Johns Hopkins, 1932.....	1934	1935
Kerns, T. C., Durham; Univ. of Pa., 1911; U.N.C.....	1911	1913
Lawson, R. B., Chapel Hill; Harvard, 1936.....	1940	1941
Lee, Albert Francis, Seattle, Wash.; Duke Univ., 1937.....	1939	1940
London, Arthur Hill, Jr., Durham; Univ. of Pa., 1927.....	1927	1930
Lyman, Richard S., Durham; Johns Hopkins, 1921.....	1940	1941
MacNider, Wm. deB., Chapel Hill (Hon.); U.N.C., 1903.....	1903	1903
Makepeace, A. Watts, Chapel Hill; Harvard, 1928.....	1941	1941
Manning, I. H., Chapel Hill (Hon.); Long Island Coll. Hospital, 1897; U. N. C.	1899	1901
Markham, Blackwell, Durham; Harvard Univ., 1922; U.N.C.....	1922	1925
Martin, Donald S., Durham; Univ. of Rochester, 1930.....	1938	1939
McBryde, Angus M., Durham; Univ. of Pa., 1928.....	1931	1932
McCutcheon, W. B., Durham; Med. Coll. of Va., 1921.....	1921	1925
McKee, Lewis Middleton, Durham; Temple Univ., 1933; U.N.C.....	1934	1934
McPherson, S. D., Durham (Hon.); Univ. of Md., 1903; U.N.C.....	1903	1904
Menefee, E. E., Jr., Durham; Duke Univ., 1936.....	1940	1941
Milam, D. F., Chapel Hill; Univ. of Chicago, 1923.....	1939	1940
Morgan, W. G., Chapel Hill; Univ. of Pa., 1931.....	1931	1937
Nichols, R. E., Jr., Durham; Univ. of Pa., 1930; U.N.C.....	1930	1932
Nichols, R. E., Sr., Durham (Hon.); Med. Coll. of Va., 1890.....	1890	1904
Nicholson, W. M., Durham; Johns Hopkins, 1931.....	1935	1937
Norton, Roy, Fort Bragg; Vanderbilt, 1928; U. N. C.	1928	1932
Orgain, Edward S., Durham; Univ. of Pa., 1930.....	1934	1936
Patterson, Fred G., Chapel Hill; Univ. of Pa., 1937.....	1937	1940
Pearse, Richard L., Durham; Harvard Univ., 1931.....	1938	1938
Perry, D. R., Durham; Jeff. Med. Coll., 1919; Wake Forest, 1917.....	1919	1922
Persons, Elbert Lansley, Durham; Harvard Univ., 1927.....	1931	1931
Raney, R. Beverly, Durham; Harvard Univ., 1930.....	1934	1935
Reeves, Robert J., Durham; Baylor Univ., 1924.....	1930	1930
Reque, Paul, Durham; Duke, 1933.....	1940	1941
Richardson, W. P., Chapel Hill; Med. Coll. of Va., 1928; Wake Forest, 1926	1928	1929
Riggsbee, A. E., Durham; Univ. of N. C., 1909.....	1909	1911
Roberson, Foy, Durham; Jeff. Med. Coll., 1909; U.N.C.....	1909	1912
Roberts, Bryan Nazer, Hillsboro; Univ. of Md., 1925; U.N.C.....	1925	1926
Roberts, B. W., Durham; Univ. of Md., 1924; U. N. C.	1924	1927
Roberts, Louis C., Durham; Duke Univ., 1933.....	1935	1940
Robertson, E. M., Durham; Tulane, 1912; U.N.C.....	1912	1929
Rosenau, M. J., Chapel Hill (Hon.); Univ. of Pa., 1889.....	1937	1937
Ross, Geo. H., Durham (Hon.); Univ. of Tenn., 1899.....	1899	1904
Ross, Robert A., Durham; Univ. of Pa., 1922; U.N.C.....	1922	1926
Rude, Joe C., Durham; Univ. of Oklahoma, 1930.....	1941	1941
Ruffin, J. M., Durham; Univ. of Va., 1926.....	1930	1931
Schiebel, Herman Max, Durham; Johns Hopkins, 1933.....	1938	1940
Schuler, J. E., Durham; Med. Coll. of Va., 1914.....	1920	1922
Schulze, William, Durham; Duke Univ., 1936.....	1940	1941
Smith, Annie T., Durham; Univ. of Ill., 1923; U.N.C.....	1925	1926
Smith, D. T., Durham; Johns Hopkins, 1922.....	1931	1931
Speed, Josenh A., Durham; Jeff. Med. Coll., 1914.....	1914	1916
Spikes, N. O., Durham; Jeff. Med. Coll., 1924; U.N.C.....	1924	1927
Sprunt, Douglas H., Durham; Yale Univ., 1927.....	1934	1935
Stanford, Lois Foote, Durham; Univ. of Pa., 1921.....	1923	1924
Stanford, W. R., Durham; Univ. of Pa., 1919; U.N.C.....	1919	1923
Stone, Robert Edward, Chapel Hill; Harvard Univ., 1934.....	1937	1940
Strowd, W. A., Durham (Hon.); Univ. of N. C., 1909.....	1909	1911
Sweaney, Hunter M., Durham; Univ. of Pa., 1919; U.N.C.....	1919	1920
Thomas, Walter Lee, Durham; Univ. of Va., 1931.....	1937	1938
Trent, J. C., Durham; Univ. of Pa., 1938.....	1940	1941
Vaughan, Walter Weddle, Durham; Jeff. Med. Coll., 1933.....	1933	1938
Watkins, Geo. T., Jr., Durham; Jeff. Med. Coll., 1915; Wake Forest, 1913	1915	1917
Watkins, W. M., Durham; Jeff. Med. Coll., 1923.....	1923	1925
Wilkins, R. B., Durham; N. C. Med. Coll., 1913.....	1913	1917
Woodhall, Barnes, Durham; Johns Hopkins, 1930.....	1937	1937

EDGEcombe-NASH COUNTIES SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President:		
Secretary: McDowell, W. K., Tarboro; Jeff. Med. Coll., 1931.....	1931	1934
Anderson, R. S., Rocky Mount; Univ. of Md., 1924; U.N.C.....	1924	1932
Bailey, C. W., Rocky Mount; Jeff. Med. Coll., 1925; Wake Forest, 1923	1925	1930
Bass, Spencer P., Tarboro (Hon.); Univ. of Va., 1906.....	1907	1909
Battle, Margaret White, Rocky Mount; Univ. of Mich., 1933.....	1936	1937
Battle, N. P., Rocky Mount; Univ. of Pa., 1926; U.N.C.....	1930	1931
Boice, E. S., Rocky Mount; Univ. of Pa., 1909.....	1914	1915
Brantley, Hassell, Spring Hope (Hon.); Jeff. Med. Coll., 1888.....	1888	1901
Brantley, J. C., Spring Hope; Jeff. Med. Coll., 1916.....	1916	1922
Bunn, J. P., Rocky Mount; Univ. of Md., 1935.....	1935	1938
Coppedge, T. O., Nashville; Coll. of P. & S., Balt., 1908; U.N.C.....	1909	1917
Crumpler, James Fulton, Rocky Mount; Bellevue Hosp. Med. School, 1930.....	1930	1935
Cutchin, J. Henry, Whitakers; Univ. Coll. of Med., 1911; U.N.C.....	1911	1915
Daughtridge, A. L., Rocky Mount; Univ. of Md., 1924; U.N.C.....	1924	1924
Deans, A. W., Battleboro; Med. Coll. of Va., 1915.....	1915	1917
Edmondson, Frank, Tarboro; Temple Univ., 1937.....	1937	1939
Fleming, M. I., Rocky Mount; Jeff. Med. Coll., 1904; U.N.C.....	1906	1919
Gorham, H. J., Nashville; Univ. of Md., 1926.....	1926	1927
Green, W. W., Tarboro (Hon.); Univ. of N. C., 1908.....	1908	1910
Jones, W. S., Nashville; Med. Coll. of Va., 1927; Wake Forest, 1925....	1927	1927
Justa, Samuel H., Rocky Mount; Med. Coll. of Va., 1933.....	1934	1934
Kinlaw, Wm. B., Rocky Mount; Univ. of Pa., 1920; U. N. C.....	1920	1922
Kornegay, Lemuel W., Rocky Mount (Hon.); N. C. Med. Coll., 1906....	1906	1906
Lane, John L., Rocky Mount; N. C. Med. Coll., 1906.....	1906	1914
Martin, J. H., Red Oak; Univ. of Nashville, 1903.....	1904	1916
Noell, R. H., Rocky Mount; Univ. of Md., 1916.....	1916	1920
Perry, E. M., Rocky Mount; Coll. of P. & S., Balt., 1907.....	1907	1919
Raby, J. G., Tarboro; Univ. Coll. of Med., 1911.....	1911	1913
Royster, Thomas H., Tarboro; Univ. Coll. of Med., 1908.....	1908	1914
Smith, C. T., Rocky Mount; Univ. of Pa., 1918; U.N.C.....	1918	1920
Smith, J. G., Rocky Mount; Duke Univ., 1934.....	1937	1938
Speight, J. A., Rocky Mount; Univ. of La., 1914; U.N.C.....	1915	1916
Staley, S. Walter, Rocky Mount (Hon.); Med. Coll. of S. C., 1901; U. N. C.....	1901	1904
Stone, M. L., Rocky Mount; Univ. of Pa., 1924; U.N.C.....	1928	1928
Sykes, J. V., Rocky Mount; Univ. of Pa., 1929.....	1929	1930
Thorpe, A. T., Rocky Mount; Univ. of Pa., 1921; U. N. C.....	1921	1923
Vann, J. R., Spring Hope; Jeff. Med. Coll., 1917.....	1917	1920
Wall, W. S., Rocky Mount; Univ. of Pa., 1933; U.N.C.....	1933	1936
Whitaker, J. Allen, Rocky Mount; Temple Univ., 1933; U.N.C.....	1934	1935
Willis, B. C., Rocky Mount; Med. Coll. of Va., 1909.....	1916	1917
Wright, John E., Macclesfield; Jeff. Med. Coll., 1937.....	1937	1938

FORSYTH COUNTY MEDICAL SOCIETY

President: Street, C. A., Winston-Salem; Harvard, 1918.....	1918	1925
Secretary: Yoder, Paul A., Winston-Salem; Univ. of Pa., 1923; U.N.C.....	1923	1925
Adams, Carlton N., Winston-Salem; Duke Univ., 1932.....	1936	1937
Ader, O. L., Walkertown; Univ. of Pa., 1925.....	1925	1927
Andrew, L. A., Jr., Winston-Salem; U. N. C. and Duke, 1932.....	1932	1936
Avery, E. S., Winston-Salem; Univ. of Pa., 1928.....	1928	1930
Beavers, J. W., Kernersville; Univ. of Pa., 1930; Wake Forest, 1928....	1930	1935
Benbow, Edgar V., Winston-Salem; Jeff. Med. Coll., 1925; U.N.C.....	1925	1928
Bowers, M. A., Winston-Salem; Tulane, 1911; U.N.C.....	1911	1914
Bradford, G. E., Winston-Salem; Univ. of Tenn., 1933.....	1935	1936
Brooks, E. Bruce, Winston-Salem; Duke Univ., 1933.....	1935	1936
Butler, Leroy J., Winston-Salem; Med. Coll. of Va., 1915.....	1920	1921
Bynum, Wade H., Germantown (Hon.); Univ. Coll. of Med., 1900.....	1900	1900
Carlton, Romulus L., Winston-Salem (Hon.); Univ. of Md., 1906.....	1906	1906
Carpenter, Coy C., Winston-Salem; Syracuse Univ., 1924; Wake Forest, 1922.....	1924	1927
Casstevens, J. C., Clemmons; Med. Coll. of Va., 1926; Wake Forest, 1924.....	1926	1927
Combs, Fielding, Winston-Salem; Med. Coll. of Va., 1923.....	1931	1932
Cooke, G. C., Winston-Salem; Univ. of Md., 1919; U.N.C.....	1919	1920
Couch, V. F., Winston-Salem; Coll. of P. & S., N. Y., 1911; Wake Forest, 1908.....	1911	1919
Craig, S. Douglas, Winston-Salem; Tulane Univ., 1908.....	1911	1912

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Dalton, Wm. N., Winston-Salem (Hon.); N. C. Med. Coll., 1904.....	1904	1905
Davis, J. P., Camp Livingston, La.; Univ. of Pa., 1934.....	1937	1938
Davis, Thomas W., Winston-Salem (Hon.); S. C. Med. Coll., 1898; U. N. C.	1899	1899
Drummond, C. S., Winston-Salem; Univ. of Ga., 1930.....	1933	1933
Fearington, J. C. P., Winston-Salem; Rush Med. Coll., 1930; U.N.C.....	1933	1934
Fritz, O. G., Walkertown; Med. Coll. of Va., 1931.....	1932	1940
Garvey, Fred K., Winston-Salem; Univ. of Cincinnati, 1925; U.N.C.....	1925	1932
Garvey, R. R., Winston-Salem; N. C. Med. Coll., 1915.....	1915	1919
Gilbert, E. L., Winston-Salem; Univ. of Tenn., 1932.....	1935	1936
Grimes, W. L., Winston-Salem; Johns Hopkins, 1910.....	1910	1915
Harrill, J. A., Winston-Salem; Univ. of Pa., 1935.....	1935	1939
Hart, O. J., Winston-Salem; Med. Coll. of S. C., 1925.....	1930	1932
Hege, J. Roy, Winston-Salem; Univ. of Md., 1916; U.N.C.....	1916	1917
Helsabeck, B. A., Winston-Salem; Med. Coll. of Va., 1931.....	1931	1936
Helsabeck, Chester J., Walnut Cove; Univ. of Md., 1919.....	1919	1922
Helsabeck, R. S., King; N. C. Med. Coll., 1913.....	1913	1936
Henley, Ruth D., Winston-Salem; Woman's Med. Coll. of Pa., 1935.....	1937	1938
Hightower, Felda, Winston-Salem; Univ. of Penna., 1933.....	1933	1936
Hurdle, S. W., Winston-Salem; Jeff. Med. Coll., 1914.....	1914	1915
Izlar, H. L., Winston-Salem; Med. Coll. of S. C., 1915.....	1916	1917
Johnson, Wingate M., Winston-Salem (Hon.); Jeff. Med. Coll., 1908.....	1908	1910
Jones, Beverley N., Winston-Salem; Med. Coll. of Va., 1915.....	1915	1921
Jones, R. Rives, Winston-Salem; Med. Coll. of Va., 1923.....	1923	1925
Keiger, O. R., Winston-Salem; Univ. Coll. of Med., 1911; U.N.C.....	1911	1915
Kennedy, L. T., Winston-Salem; Jeff. Med. Coll., 1935.....	1937	1939
Kerr, Jas. Edwin, Danbury (Hon.); Univ. of Md., 1897.....	1898	1898
Kirby, W. L., Winston-Salem; Vanderbilt Univ., 1925.....	1926	1930
Lassiter, V. C., Winston-Salem; Emory Univ., 1925.....	1928	1929
Linville, Aaron Y., Winston-Salem (Hon.); Univ. of N. Y., 1889.....	1889	1896
Lock, Frank R., Winston-Salem; Tulane, 1935.....	1935	1941
Long, Vann McKee, Winston-Salem (Hon.); N. C. Med. Coll., 1906.....	1906	1908
MacMillan, E. A., Winston-Salem; Univ. of Pa., 1933.....	1933	1937
Marshall, J. F., Winston-Salem; Univ. of Pa., 1931.....	1931	1935
Martin, Lester P., Mocksville; Jeff. Med. Coll., 1920.....	1920	1921
Mauzy, Chas. H., Jr., Winston-Salem; Univ. of Va., 1933.....	1938	1939
McCants, C. H., Winston-Salem; Med. Coll. of S. C., 1925.....	1929	1931
McMillan, R. L., Winston-Salem; Duke Univ., 1933.....	1936	1938
Moore, R. A., Winston-Salem; N. C. Med. Coll., 1911.....	1911	1917
Munt, H. F., Winston-Salem; Med. Coll. of Va., 1911.....	1914	1915
Ogburn, L. C., Winston-Salem; Jeff. Med. Coll., 1928.....	1928	1936
Paddison, Jno. Robt., Kernersville (Hon.); Univ. of Md., 1902; U.N.C.....	1902	1904
Pegg, F. G., Winston-Salem; Med. Coll. of Va., 1934.....	1934	1936
Pepper, John K., Winston-Salem (Hon.); Coll. of P. & S., Balt., 1907.....	1908	1908
Pfohl, Samuel F., Winston-Salem (Hon.); Univ. of Pa., 1894.....	1898	1898
Pool, B. B., Winston-Salem; Jeff. Med. Coll., 1923; Wake Forest, 1921.....	1923	1925
Poole, C. Glenn, Winston-Salem; Tulane, 1924.....	1924	1927
Pulliam, B. E., Winston-Salem; Jeff. Med. Coll., 1928.....	1928	1931
Rankin, S. W., Winston-Salem; Jeff. Med. Coll., 1912.....	1912	1914
Rodick, J. C., Winston-Salem; Tulane, 1921.....	1921	1941
Rousseau, J. P., Winston-Salem; Univ. of Md., 1918; U.N.C.....	1920	1920
Schallert, P. O., Winston-Salem; Univ. of Ill., 1904.....	1911	1912
Simmons, R. R., Winston-Salem; Med. Coll. of Va., 1917.....	1923	1924
Sink, V. Rex, Winston-Salem; Univ. of Pa., 1928; U.N.C.....	1930	1935
Slate, John S., Winston-Salem (Hon.); Univ. Coll. of Med., 1900.....	1899	1904
Spainhour, Ellis H., Winston-Salem (Hon.); Balt. Med. Coll., 1898.....	1898	1898
Speas, D. C., Winston-Salem; Univ. of Md., 1911.....	1913	1924
Speas, W. P., Winston-Salem, Univ. Coll. of Med., 1911.....	1911	1912
Spicer, Richard W., Winston-Salem; N. C. Med. Coll., 1910; Univ. of Pa., 1911.....	1910	1916
Sprunt, W. H. Jr., Winston-Salem; Univ. of Pa., 1918.....	1918	1925
Starling, H. M., Winston-Salem; Med. Coll. of Va., 1931.....	1931	1937
Stephenson, Anne L., Winston-Salem; Woman's Med. Coll. of Pa., 1937.....	1939	1940
Stone, G. E., King; Med. Coll. of Va., 1915.....	1915	1936
Strickland, Edward F., Winston-Salem (Hon.); Univ. of N. Y., 1887; U. N. C.	1887	1893
Tuttle, R. G., Winston-Salem; N. C. Med. Coll., 1909.....	1909	1913
Valk, A. deT., Winston-Salem; Johns Hopkins, 1910.....	1913	1914
Wall, R. L., Winston-Salem; Jeff. Med. Coll., 1912; Wake Forest, 1910.....	1912	1915
Whitaker, R. H., Kernersville; Univ. of Pa., 1934.....	1934	1939
Whittington, Jas. B., Winston-Salem; N. C. Med. Coll., 1911.....	1911	1911
Wolfe, R. V., Winston-Salem; Univ. of Ind., 1937.....	1940	1941
Wright, O. E., Winston-Salem; Emory Univ., 1924.....	1924	1928

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Wyatt, Wortham, Winston-Salem; Univ. of Pa., 1913; U.N.C.....	1913	1916
Wylie, W. deK., Winston-Salem; Univ. of Va., 1924.....	1926	1928

FRANKLIN COUNTY SOCIETY

Burt, S. P., Louisburg, (Hon.); Coll. of P. & S., Balt., 1896.....	1896	1904
Perry, A. H., Wood; Univ. of Md., 1924.....	1924	1925
Yarborough, R. F., Louisburg, (Hon.); Geo. Wash. Univ. 1898.....	1899	1899

GASTON COUNTY SOCIETY

President: Anders, McT. G., Gastonia, (Hon.); Md. Med. Coll., 1901	1902	1902
Secretary: Norman, Dorothy F., Gastonia; Womans Med. Coll. of Pa., 1938; U. N. C.	1938	1940
Allen, M. H., Cramerton; Emory Univ., 1929.....	1930	1931
Anthony, J. E., Kings Mountain; Univ. of Tenn., 1911.....	1911	1911
Anthony, W. A., Gastonia; Med. Coll. of Va., 1929.....	1929	1932
Belk, Geo. W., Gastonia; Atlanta Sch. of Med., 1913.....	1918	1924
Blair, J. L., Gastonia; Atlanta Med. Coll., 1915.....	1920	1921
Blair, J. Samuel, Gastonia; Med. Coll. of S. C., 1937.....	1938	1940
Chandler, L. D., Gastonia; Med. Coll. of S. C., 1938.....	1940	1941
Clinton, R. S., Gastonia; Univ. of Md., 1914.....	1914	1920
Glenn, Chas. A., Gastonia; Med. Coll. of S. C., 1936.....	1936	1937
Glenn, H. F., Jr., Gastonia; Emory Univ., 1932.....	1932	1934
Glenn, Lucius N., Gastonia (Hon.); Univ. of Md., 1897.....	1897	1904
Grigg, John R., Gastonia; Univ. of Louisville, 1927.....	1928	1937
Groves, R. B., Lowell; Med. Coll. of Va., 1924.....	1924	1925
Houser, F. M., Cherryville; Univ. of Pa., 1928; U. N. C.	1929	1930
Jones, W. M., Gastonia; Med. Coll. of S. C., 1922.....	1927	1928
Lyday, C. E., Gastonia; Atlanta School of Med., 1910.....	1910	1920
McAdams, C. R., Belmont; N. C. Med. Coll., 1912.....	1912	1916
McChesnev, W. W., Gastonia; Med. Coll. of Va., 1915.....	1926	1927
McConnell, H. R., Gastonia; Univ. of Md., 1924.....	1927	1930
McDowell, R. H., Belmont; Univ. of Md., 1929; U. N. C.	1930	1931
Miller, R. C., Gastonia; N. C. Med. Coll., 1909; U.N.C.....	1918	1919
Mitchell, R. H., Gastonia; Med. Coll. of Va., 1936.....	1936	1938
Moore, B. D., Mt. Holly; Med. Coll. of Va., 1915.....	1915	1921
Norman, J. Standing, Gastonia; Coll. of P. & S., Balt., 1909; U.N.C.....	1911	1920
Parks, W. B., Gastonia; Univ. of Md., 1924.....	1924	1927
Patrick, Geo. R., Jr., Bessemer City; Univ. of Md., 1916.....	1916	1920
Powell, H. S., Gastonia; Univ. of Va., 1932.....	1932	1937
Pressly, J. M., Belmont; N. C. Med. Coll., 1915.....	1915	1920
Pugh, Chas. H., Gastonia; N. C. Med. Coll., 1910.....	1910	1913
Quickel, John C., Gastonia; Univ. of Pa., 1932; U.N.C.....	1932	1936
Ramsaur, J. T., Cherryville; Univ. of Chicago, 1933.....	1934	1935
Reid, James W., Lowell (Hon.); Jeff. Med. Coll., 1908; U.N.C.....	1908	1909
Rhyne, Robert Edgar, Gastonia (Hon.); N. C. Med. Coll., 1907.....	1907	1908
Roberts, W. M., Gastonia; Tufts, 1925.....	1928	1929
Robinson, James Lee, Gastonia; Univ. of Pa., 1932.....	1932	1936
Stroupe, A. U., Jr., Mount Holly; Med. Coll. of Va., 1931.....	1932	1938
Utley, H. G., Gastonia; Univ. of Md., 1894.....	1894	1941
Weathers, B. G., Stanley; Med. Coll. of Va., 1929.....	1929	1941
Wilkins, Samuel A., Dallas (Hon.); Univ. of Ky., 1902.....	1903	1903

GATES COUNTY SOCIETY

Carter, Thomas L., Gatesville; Med. Coll. of Va., 1917.....	1917	1928
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GRAHAM COUNTY SOCIETY

GRANVILLE COUNTY SOCIETY

President: Thomas, Wm. N., Oxford; Med. Coll. of Va., 1911.....	1911	1914
Secretary: Carrington, S. M., Oxford; Rush Med. Coll., 1931; U.N.C.	1931	1934
Bradsher, J. S., Stovall; Univ. of Va., 1925.....	1925	1928
Clay, E. L., Oxford; Univ. of Ky., 1929.....	1929	1933
Daniel, N. C., Oxford (Hon.); N. C. Med. Coll., 1895.....	1895	1903
Elliott, Julian C., Oxford; Univ. of Md., 1926; Wake Forest, 1924.....	1926	1929
Hays, B. K., Oxford (Hon.); Univ. Coll. of Med., 1894.....	1894	1897
Morris, J. A., Franklinton, (Hon.); Vanderbilt Univ. 1890.....	1893	1899
Noblin, Roy L., Oxford; Med. Coll. of Va., 1924.....	1924	1925
Norwood, Ballard, Oxford; Med. Coll. of Va., 1937.....	1937	1940

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Taylor, Rives W., Oxford; Tulane, 1926; U.N.C.	1926	1928
Taylor, Wm. L., Oxford (Hon.); Univ. of Va., 1900	1901	1901
Thompson, J. W., Creedmoor; Ky. Univ., Louisville, 1904	1907	1917
Winston, P. H., Clarksville, Va.; Med. Coll. of Va., 1929	1929	1930

GREENE COUNTY SOCIETY

President: Walker, Robert Jeffrey, Jr., Snow Hill; Med. Coll. of Va., 1932	1934	1935
Secretary: Jones, Clarence Porter, Jr., Snow Hill; Med. Coll. of Va., 1934; Wm. and Mary, 1929	1939	1940
Carroll, F. W., Hookerton; Med. Coll. of Va., 1925; Wake Forest, 1923	1926	1927
Dawson, W. E., Hookerton; Jeff. Med. Coll., 1920; Wake Forest, 1918	1920	1922
Harper, J. H., Snow Hill (Hon.); Jeff. Med. Coll., 1905; U.N.C.	1906	1906
Whittington, Wm. W., Snow Hill (Hon.); Louisville Med. Coll., 1895	1895	1902

GUILFORD COUNTY SOCIETY

President: Patterson, Fred M., Greensboro; Univ. of Pa., 1924; U. N. C.	1924	1928
Secretary: Warwick, H. C., Greensboro; Med. Coll. of Va., 1934	1934	1936
Treasurer: Apple, E. D., Greensboro; Wash. Univ. Sch. of Med., 1929; U. N. C.	1929	1936
Aydlett, H. T., Greensboro (Hon.); Univ. of Va., 1894	1895	1906
Banner, Chas. W., Greensboro (Hon.); Univ. of Md., 1899	1899	1901
Benton, Wayne J., Greensboro; Syracuse Univ., 1934	1934	1936
Bonner, M. D., Jamestown; Univ. of Md., 1930; U.N.C.	1930	1934
Brockmann, Harry L., High Point; Univ. of Pa., 1917; U.N.C.	1917	1921
Bnie, R. M., Greensboro; Jeff. Med. Coll., 1914; Wake Forest, 1912	1914	1917
Burwell, John C., Jr., Greensboro; Duke Univ., 1933	1936	1937
Cater, C. D., Greensboro; Emory Univ., 1920	1923	1924
Cole, Walter F., Greensboro (Hon.); Johns Hopkins, 1909	1909	1910
Collings, Ruth M., Greensboro; Univ. of Pa., 1923	1926	1927
Cook, H. L., Jr., Greensboro; Jeff. Med. Coll., 1918; U.N.C.	1918	1920
Cook, J. L., Greensboro; Univ. of Pa., 1925; U.N.C.	1925	1928
Creech, L. U., High Point; Tulane	1939	1940
Dalton, B. B., Liberty; Duke Univ., 1932; U. N. C.	1933	1935
Davis, P. B., High Point; Jeff. Med. Coll., 1926; U. N. C.	1926	1929
Dawson, W. R., Greensboro		1941
Dees, Ralph Erastus, Greensboro (Hon.); Univ. of Md., 1906	1908	1909
Dees, Rigdon O., Greensboro (Hon.); Univ. of Md., 1906	1907	1907
Dunn, R. B., Greensboro; McGill Univ., 1933	1936	1937
Durham, C. W., Greensboro; Geo. Washington Univ., 1927	1927	1930
Dyer, J. W., High Point; Univ. of Louisville, 1916	1921	1921
Edwards, V. E., Stokesdale; Univ. of Md., 1913	1913	1913
Farmer, Wm. D., Greensboro; Duke Univ., 1934	1939	1939
Flagge, Phillip W., High Point (Hon.); Washington Univ., 1902	1905	1906
Fortune, Alex. F., Greensboro (Hon.); Univ. Coll. of Med., 1900; U.N.C.	1900	1904
Geddie, K. B., High Point; Jeff. Med. Coll., 1921; U.N.C.	1921	1923
Gilmore, C. M., Greensboro; Med. Coll. of Va., 1925; Wake Forest, 1923	1925	1926
Glascok, Joy H., Greensboro (Hon.); Women's Med. Coll. of Balt., 1896	1896	1900
Gove, Anna M., Greensboro (Hon.); Woman's Med. Coll. of N. Y. Infirmary, 1892	1894	1896
Grayson, C. S., High Point (Hon.); Geo. Washington Univ., 1906	1907	1908
Groome, J. G., High Point; Univ. of Cincinnati, 1924; U.N.C.	1924	1925
Harden, R. N., Greensboro; Univ. of Pa., 1922	1922	1924
Harrill, H. C., Greensboro		1940
Harrison, Edmund, Greensboro (Hon.); Univ. Coll. of Med., 1896	1900	1900
Harrison, Edward T., High Point; Johns Hopkins, 1926	1926	1928
Henry, Marina H., Jamestown; Women's Med. Coll. of Pa., 1938	1938	1940
Herring, R. A., High Point; Tulane, 1905; U.N.C.	1923	1924
Hiatt, H. B., Oldsmar, Fla., (Hon.); Univ. of Md., 1907; U. N. C.	1907	1907
Holladay, L. W., High Point; Med. Coll. of Va., 1929	1936	1937
Holt, D. W., Greensboro; Jeff. Med. Coll., 1918	1918	1921
Hudson, C. C., Greensboro; Univ. Coll. of Med., 1910	1918	1925
Jennings, C. W., II, Greensboro; Med. Coll. of Va., 1916	1916	1926
Johnson, Harry L., Greensboro; Univ. of Cincinnati, 1924	1924	1927
Jones, Wm. M., Greensboro (Hon.); Univ. of Md., 1903	1903	1903
Keith, Marion Y., Greensboro; Univ. of Md., 1923	1923	1927
Knight, Wm. P., Greensboro (Hon.); Balt. Med. Coll., 1898	1898	1898
LeBauer, S. F., Greensboro; Univ. of Va., 1929	1930	1932
Lennon, H. C., Greensboro		1941
Little, H. L., Gibsonville; Washington Univ., 1934; U.N.C.	1934	1937

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Lyday, R. O., Greensboro; Univ. of Pa., 1920; U.N.C.	1920	1927
Lyon, B. R., Greensboro; Col. Univ., 1915	1920	1920
Maness, A. K., Greensboro; Jeff. Med. Coll., 1928; U.N.C.	1928	1929
Mann, I. Thurman, High Point; Jeff. Med. Coll., 1912; U.N.C.	1912	1915
Mathews, Robert Wm., Greensboro; Emory Univ., 1932	1937	1938
McAlister, Jean, Greensboro; Univ. of Pa., 1933; U.N.C.	1936	1937
McAnally, Wm. J., High Point (Hon.); Balt. Med. Coll., 1897	1896	1899
McCain, Walkup K., High Point; Jeff. Med. Coll., 1929; U.N.C.	1929	1930
McCain, Wm. R., High Point (Hon.); Univ. of Md., 1897; U.N.C.	1898	1898
Merritt, Jesse Fred, Greensboro; Northwestern Univ., 1936	1937	1938
Miles, May S., Greensboro (Hon.); Laura Mem. Woman's Med. Coll., 1898	1904	1905
Mills, Chas. R., Greensboro; Univ. of Pittsburgh, 1936	1938	1938
Moseley, Chas. W., Greensboro (Hon.); Balt. Med. Coll., 1893	1893	1896
Norment, W. B., Greensboro; Jeff. Med. Coll., 1922; U.N.C.	1922	1932
Ogburn, H. H., Greensboro; Johns Hopkins, 1913; U.N.C.	1913	1914
Parker, H. R., Greensboro; Univ. of Syracuse, 1923; Wake Forest, 1921	1924	1925
Parks, W. C., Jr., High Point; S. C. Med. Coll., 1938	1938	1940
Pate, F. J., Greensboro, (Hon.); Univ. of Md. and Coll. of P. & S., Balt., 1908	1908	1910
Perry, G. G., High Point; Med. Coll. of Va., 1933	1933	1934
Pipes, David M., Greensboro; Tulane, 1934	1939	1940
Post, J. J., Greensboro; Columbia Univ., 1919	1925	1926
Ravenel, S. F., Greensboro; Johns Hopkins, 1923	1923	1926
Reaves, W. P., Greensboro (Hon.); Univ. of the South, 1903	1905	1907
Register, J. F., Greensboro; Med. Coll. of S. C., 1931	1936	1937
Rertzel, Claude E., High Point (Hon.); Coll. of P. & S., Atlanta, 1902	1902	1902
Rhudy, Booker E., Greensboro; Med. Coll. of Va., 1916	1926	1927
Rubin, A. S., Greensboro		1941
Saunders, S. Stewart, High Point; Harvard Univ., 1924	1926	1927
Schoonover, R. A., Greensboro; Balt. Med. Coll., 1905	1912	1912
Sharp, O. L., Greensboro; Jeff. Med. Coll., 1922	1924	1925
Sharpe, F. A., Greensboro; Univ. of Pa., 1916	1916	1920
Shelburne, P. A., Greensboro; Univ. of Va., 1927	1928	1928
Sikes, C. Henry, Greensboro; Jeff. Med. Coll., 1931	1933	1934
Siske, Grady C., Pleasant Garden; Chicago Med. Coll., 1936	1937	1938
Slate, J. E., High Point; Tulane Univ., 1934	1934	1934
Slate, J. W., High Point; Univ. Coll. of Med., 1900	1899	1925
Slate, M. L., High Point; Univ. of Md., 1931	1931	1934
Smith, Alick T., Greensboro; Med. Coll. of Va., 1908	1910	1913
Smith, O. Norris, Greensboro; Univ. of Pa., 1933	1938	1938
Smith, R. M., Greensboro; Univ. of Pa., 1934	1934	1937
Stanton, D. A., High Point (Hon.); Vanderbilt Univ., 1887	1887	1891
Starr, H. F., Greensboro; Jeff. Med. Coll., 1916; U.N.C.	1916	1917
Stelling, R. N., Greensboro; Univ. of Ga., 1930	1933	1934
Stevens, Jos. B., Greensboro; Duke Univ., 1935	1940	1940
Strickland, H. G., Greensboro; Univ. of Md., 1930; U.N.C.	1930	1937
Sumner, Emmett A., High Point; Baylor Univ., 1925	1926	1927
Tankersley, J. W., Greensboro (Hon.); Jeff. Med. Coll., 1906; U.N.C.	1906	1906
Taylor, F. R., High Point; Univ. of Pa., 1913	1913	1915
Taylor, James N., Greensboro (Hon.); Med. Coll. of Va., 1901	1902	1905
Taylor, James T., Greensboro (Hon.); Univ. of Md., Coll. of P. & S., Balt., 1908	1908	1910
Taylor, S. R., Greensboro, Univ. of Pa., 1921; U.N.C.	1921	1924
Thelen, Christien, Greensboro; Med. Coll. of Va., 1937	1939	1940
Thomas, J. G., Greensboro; Med. Coll. of Va., 1915	1915	1920
Thompson, C. D., High Point (Hon.); Univ. of Tenn., 1901	1901	1904
Tice, W. T., High Point; Jeff. Med. Coll., 1927; U. N. C.	1927	1929
Vaughan, Edwin W., Greensboro; Univ. of Va., 1937	1940	1940
Watson, H. A., Greensboro		1941
Whittington, Claude T., Greensboro; Univ. of Md., 1927	1927	1929
Williams, John D., Guilford Station (Hon.); Vanderbilt Univ., 1898	1898	1898
Williams, John D., Jr., Stokesdale; Temple Univ., 1930	1931	1935
Wolfe, H. C., Greensboro; Med. Coll. of Va., 1917	1917	1920
Wood, Geo. T., High Point; Jeff. Med. Coll., 1928; U.N.C.	1928	1935
York, Alexander Arthur, High Point (Hon.); Chattanooga Med. Coll., 1907	1907	1908

HALIFAX COUNTY MEDICAL SOCIETY

President: Maddrey, M. Crocker, Roanoke Rapids; Jeff. Med. Coll., 1931	1931	1937
Secretary: Young, Robert F., Halifax; Emory Univ., 1937	1939	1940

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Bardin, R. M., Roanoke Rapids; Tulane Univ., 1929.....	1934	1935
Beckwith, R. P., Roanoke Rapids; Univ. of Pa., 191.....	1913	1916
Blowe, R. B., Weldon		1941
Broun, Matthew S., Roanoke Rapids; Columbia Coll. of P. & S., 1919.....	1922	1923
Hall, W. D., Roanoke Rapids; Med. Coll. of S. C., 1932.....	1933	1934
Higginbotham, Upshur, Roanoke Rapids; Med. Coll. of Va., 1933.....	1937	1937
Jarman, F. G., Roanoke Rapids; Univ. Coll. of Med., 1911.....	1914	1916
Joyner, P. W., Enfield; Syracuse Univ., 1932; Wake Forest, 1930.....	1932	1935
Martin, J. W., Roanoke Rapids; Med. Coll. of Va., 1916.....	1919	1920
Neville, C. H., Scotland Neck; Tulane, 1927.....	1927	1928
Nicholson, B. M., Enfield; Univ. Coll. of Med., 1910.....	1910	1912
Palmer, Horace, Littleton; Atlanta School of Med., 1912.....	1912	1920
Smith, O. F., Scotland Neck (Hon.); Univ. Coll. of Med., 1899; U.N.C.	1899	1904
Suiter, W. G., Weldon; Med. Coll. of Va., 1917.....	1917	1920
Thigpen, H. G., Scotland Neck; Jeff. Med. Coll., 1917; U.N.C.....	1917	1920
Tillery, J. G., Enfield		1941
Weathers, Bahnson, Roanoke Rapids; Washington Univ., 1917.....	1921	1922
White, Francis W. M., Halifax; Med. Coll. of Va., 1924; Wake Forest, 1921	1924	1924

HARNETT COUNTY SOCIETY

President:

Secretary: Hunter, W. B., Lillington; Univ. of Pa., 1911.....	1913	1920
Byrd, W. C., Angier; Jeff. Med. Coll., 1923; Wake Forest, 1921.....	1923	1937
Corbett, Clarence Lee, Dunn; Emory Univ., 1927.....	1927	1928
Doffermire, L. R., Erwin; Temple Univ., 1938.....	1938	1939
Eldridge, Harvey A., Dunn; Med. Coll. of Va., 1934.....	1934	1936
Fleming, Fred H., Coats; Tulane, 1930; Wake Forest, 1928.....	1930	1933
Halford, Jos. W., Lillington (Hon.); Geo. Washington Univ., 1904.....	1905	1905
Holt, Wm. P., Sr., Erwin (Hon.); Jeff. Med. Coll., 1895.....	1895	1901
Johnson, J. R., Dunn; Med. Coll. of Va., 1932.....	1932	1941
Martin, J. F., Dunn (Hon.); N. C. Med. Coll., 1905.....	1905	1918
McKay, Joseph F., Buies Creek (Hon.); S. C. Med. Coll., 1884.....	1885	1900
O'Dell, J. W., Dunn; Univ. of Ga., 1926.....	1928	1929
Parker, Paul G., Erwin; Med. Coll. of Va., 1916.....	1916	1917
Peele, A. W., Lillington; Jeff. Med. Coll., 1930.....	1930	1933
Poole, M. B., Dunn; Med. Coll. of Va., 1938.....	1938	1941
Stanfield, W. W., Dunn; Med. Coll. of Va., 1932.....	1932	1940
Wilson, S. Glenn, Angier; Med. Coll. of Va., 1930; U. N. C.....	1930	1932
Wyatt, A. T., Lillington; Jeff. Med. Coll., 1919.....	1919	1927

HAYWOOD COUNTY SOCIETY

President: Moore, Roy H., Canton; Washington Univ., 1931; U. N. C.	1931	1934
Secretary: Owen, C. F., Jr., Canton; Univ. of Pa., 1937.....	1937	1940
Duckett, V. H., Canton; Univ. of Pa., 1930; Wake Forest, 1928.....	1930	1932
Johnson, W. C., Canton; Tulane, 1912; U.N.C.....	1912	1914
Lancaster, N. F., Waynesville; Med. Coll. of Va., 1931.....	1932	1933
McCracken, J. R., Waynesville (Hon.); N. C. Med. Coll., 1902.....	1902	1903
Osborne, Gladys H., Waynesville; Vanderbilt, 1932.....	1935	1936
Owen, M. L., Canton; Univ. of Pa., 1932.....	1932	1936
Owen, Robert H., Canton; Univ. of Pa., 1931; Wake Forest, 1929.....	1931	1935
Pate, J. F., Canton; Med. Coll. of S. C., 1927.....	1927	1929
Reeves, J. L., Canton; Vanderbilt Univ., 1913.....	1913	1917
Roberson, Robert S., Waynesville; Med. Coll. of Va., 1930; Wake Forest, 1927	1930	1932
Russell, Jesse M., Canton; Univ. of Nashville, 1911.....	1911	1912
Sisk, C. N., Waynesville; Univ. of Nashville, 1905.....	1922	1923
Stretcher, R. H., Waynesville; Rush Med. Coll., 1927.....	1927	1930
Stringfield, Samuel L., Waynesville (Hon.); Jeff. Med. Coll., 1905.....	1905	1906
Stringfield, Thomas, Waynesville (Hon.); Vanderbilt Univ., 1898; U. N. C.	1898	1899
Stringfield, Thomas, Jr., Waynesville; Univ. of S. C., 1934; U.N.C.....	1934	1937
Westmoreland, J. R., Canton; Washington Univ., 1932; U.N.C.....	1932	1934

HENDERSON COUNTY SOCIETY

President:

Secretary: Fortescue, Wm. N., Hendersonville; Duke Univ., 1934....	1934	1936
Brown, J. S., Jr., Hendersonville; Tulane, 1925.....	1926	1927
Brown, J. S., Sr., Hendersonville (Hon.); Northwestern Univ., 1893....	1894	1895

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Dixon, Guy E., Hendersonville (Hon.); Coll. of P. & S., St. Louis, 1903	1903	1903
Kirk, W. R., Hendersonville (Hon.); Central Univ., 1891	1901	1903
Salley, E. McQueen, Hendersonville (Hon.); Univ. of Md., 1905	1905	1906
Trotter, Fred O., Hendersonville (Hon.); Univ. of Minn., 1933	1934	1934

HERTFORD COUNTY SOCIETY

Bell, O. E., Winton; Okla. Univ., 1936	1937	1938
Cooke, Q. E., Murfreesboro; Med. Coll. of Va., 1937	1937	1939
Faison, Thos. G., Winton; Med. Coll. of Va., 1932	1932	1937
Matheson, J. Gaddy, Ahoskie; Jeff. Med. Coll., 1929; U. N. C.	1929	1931
Mitchell, Paul H., Ahoskie (Hon.); Univ. Coll. of Med., 1907	1907	1908
Walker, L. K., Ahoskie; Univ. of Md., 1911	1911	1917

HOKE COUNTY SOCIETY

President: O'Briant, A. L., Raeford; Jeff. Med. Coll., 1920	1920	1922
Secretary: Murray, R. L., Raeford; Univ. of Md., 1923	1923	1925
Bethune, A. C., Raeford; N. C. Med. Coll., 1913		1928
Brown, G. W., Raeford (Hon.) Ky. School of Med., 1898	1900	1900
Eason, H. F., Sanatorium; Wash. Univ. Med. Sch., 1927; U. N. C.	1927	1929
Gray, C. L., Sanatorium; Duke Univ., 1937	1937	1940
McCain, P. P., Sanatorium; Univ. of Md., Coll. of P. & S., Balt, 1911	1914	1917
Roper, W. H., Sanatorium; Univ. of Va., 1930	1940	1941
Skeen, L. B., Sanatorium; Univ. of Md., 1935; U.N.C.	1935	1936
Thomas, C. D., Sanatorium; Univ. of Ind., 1926	1930	1930

HYDE COUNTY SOCIETY

IREDELL-ALEXANDER COUNTY SOCIETY

President: Herman, Chas. B., Statesville; Jeff. Med. Coll., 1923; U. N. C.	1923	1925
Secretary: Holbrook, J. S., Statesville; Univ. of Pa., 1932; Wake Forest, 1930	1932	1934
Bell, A. E., Mooresville (Hon.); Univ. of Md.; Coll. of P. & S., 1897	1897	1904
Clayton, M. B., Statesville; Univ. of Louisville, 1917	1933	1935
Crouch, T. D., Stony Point; Univ. of Md., 1910; N. C. Med. Coll., 1909	1909	1915
Davis, Jas. W., Statesville; Univ. of Pa., 1913; U.N.C.	1913	1915
Edwards, A. M., Taylorsville; Emory Univ., 1907	1907	1934
Gibson, L. O., Statesville; N. C. Med. Coll., 1913	1913	1915
Goode, T. V., Statesville; Univ. Coll. of Med., 1912	1912	1916
Little, Lonnie M., Statesville; Jeff. Med. Coll., 1925; U.N.C.	1925	1927
McElwee, Ross S., Statesville (Hon.); Univ. of Md., 1909	1909	1910
McLaughlin, J. E., Troutman (Hon.); Univ. of Md., 1886	1886	1896
McLelland, W. D., Mooresville; Jeff. Med. Coll., 1913	1913	1917
Myers, D. L., Harmony; Tulane, 1925; U.N.C.	1928	1929
Pressley, Jas. L., Statesville; Jeff. Med. Coll., 1925	1925	1928
Rhyne, S. A., Statesville; N. C. Med. Coll., 1915	1915	1920
Robertson, J. M., Harmony; Temple Univ., 1932	1932	1934
Sharpe, Frank L., Statesville (Hon.); Univ. of N. C., 1904	1904	1905
Shaw, L. R., Statesville; Med. Coll. of Va., 1930; Wake Forest, 1928	1930	1931
Sloan, A. B., Mooresville; Med. Coll. of Va., 1924	1924	1926
Talley, J. S., Troutman; Univ. of N. C., 1909	1910	1917
Taylor, G. W., Mooresville (Hon.); N. C. Med. Coll., 1906	1906	1907
Templeton, J. Y., Mooresville; Jeff. Med. Coll., 1912	1913	1927
Thurston, Asa, Taylorsville; Univ. of Md., 1909	1909	1914

JACKSON COUNTY SOCIETY

Nichols, Alvin A., Sylva (Hon.); Univ. of Nashville, 1898	1904	1904
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JOHNSTON COUNTY SOCIETY

President: Woodard, B. L., Kenly; Univ. of Md., 1933; U. N. C.	1933	1935
Secretary: Lassiter, Will H., Selma; Med. Coll. of Va., 1938	1938	1939
Aycock, F. M., Princeton; Med. Coll. of Va., 1921	1921	1926
Booker, Edwin N., Selma; Univ. of Va., 1925	1925	1930
Brooks, H. E., Clayton; Med. Coll. of Va., 1917	1917	1923
Davidian, Vartan A., Smithfield; Kiev Univ., Russia, 1919	1929	1930
Duncan, S. A., Benson; Tulane, 1924; Wake Forest, 1921	1924	1925
Earp, R. E., Selma; Univ. of Pa., 1928	1928	1941
Fitzgerald, J. Herbert, Smithfield; Jeff. Med. Coll., 1920; U.N.C.	1920	1922
Grady, Jas. C., Kenly (Hon.); Balt. Univ., 1887	1887	1890
Hocutt, Battle A., Clayton (Hon.); Univ. of N. C., 1906	1906	1906

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
McLemore, Geo. A., Smithfield (Hon.); Univ. of N. C., 1906.....	1906	1906
Rose, A. H., Smithfield (Hon.); Jeff. Med. Coll., 1906; U. N. C.....	1906	1906
Stanley, John H., Four Oaks (Hon.); Johns Hopkins, 1904; U.N.C.....	1904	1906
Upchurch, T. G., Smithfield; Duke Univ., 1932; U.N.C.....	1932	1935
Uitley, H. H., Benson (Hon.); Balt. Med. Coll., 1906.....	1906	1907
Wharton, Watson, Smithfield; La. State Univ., 1937.....	1937	1937
Wilson, W. G., Smithfield; Jeff. Med. Coll., 1921.....	1921	1924

JONES COUNTY SOCIETY

LEE COUNTY SOCIETY

President: Hartness, W. R., Jonesboro; Univ. of Louisville, 1938.....	1938	1939
Secretary: Blue, Waylon, Jonesboro; Med. Coll. of Va., 1925.....	1925	1926
Byerly, J. H., Sanford; Northwestern Univ., 1935.....	1936	1938
Chiles, Geo. C., Sanford; Med. Coll. of Va., 1926.....	1928	1928
Foster, J. F., Sanford; N. C. Med. Coll., 1916.....	1916	1919
James, Arthur A., Jr., Sanford; Univ. of Pa., 1932; U.N.C.....	1932	1936
Knight, Floyd L., Sanford; Univ. of Va., 1924.....	1925	1926
Lutterloh, I. Hayden, Jr., Sanford; Jeff. Med. Coll., 1921; U. N. C.....	1921	1924
Matthews, M. L., Sanford (Hon.); Univ. of N. C., 1903.....	1903	1904
McIver, Lynn; Sanford (Hon.); Univ. of Ky., 1901; U.N.C.....	1902	1902
Patterson, J. H., Broadway; Med. Coll. of Va., 1932.....	1932	1934

LENOIR COUNTY SOCIETY

President: Keiter, W. Eugene, Kinston; Washington Univ., 1931.....	1935	1935
Secretary: Prichard, R. W. Pink Hill; Georgetown Univ., 1938.....	1938	1940
Boney, Elwood R., Kinston; Univ. of Pa., 1926; U.N.C.....	1926	1928
Carr, M. L., La Grange; Med. Coll. of Va., 1916.....	1916	1920
Cranz, Oscar W., Kinston; Med. Coll. of Va., 1931.....	1934	1936
Davis, Rachel D., Kinston; Women's Med. Coll. of Pa., 1932.....	1933	1934
Ellinwood, Everett H., Snow Hill; Temple Univ., 1935; U. N. C.....	1935	1937
Fuller, Henry Fleming, Kinston; Univ. of Pa., 1936.....	1936	1939
Hardy, Ira M., Kinston (Hon.); Med. Coll. of Va., 1901; U.N.C.....	1902	1902
Lee, Mike, Kinston; Tulane, 1926; Wake Forest, 1924.....	1926	1927
Lee, Thos. L., Kinston; Med. Coll. of Va., 1926.....	1926	1927
Moseley, Z. V., Kinston; Univ. Coll. of Med., 1913.....	1913	1914
Offutt, Vernon D., Kinston; Med. Coll. of Va., 1933.....	1935	1940
Parrott, M. C., Kinston; Tulane, 1917; U.N.C.....	1917	1919
Parrott, Wm. T., Kinston (Hon.); Tulane, 1897.....	1899	1901
Peery, Vance P., Kinston; Med. Coll. of Va., 1916.....	1917	1917
Sabiston, Frank, Kinston; Univ. of Md., 1918; U. N. C.....	1919	1926
Temple, R. Henry, Kinston; Univ. of Pa., 1936.....	1936	1938
Turrentine, Kilby P., Kinston; Rush Med. Coll., 1931; U.N.C.....	1932	1933
Tyndall, R. G. Kinston; Univ. of Pa., 1928; Wake Forest, 1926.....	1928	1931
West, B. C., Kinston; Univ. of Pa., 1924; U.N.C.....	1924	1926
West, C. F., Kinston; Univ. of Pa., 1917; U.N.C.....	1917	1920
Whitaker, Paul F., Kinston; Med. Coll. of Va., 1922; U.N.C.....	1922	1924
Wooten, Floyd P., Kinston; Jeff. Med. Coll., 1920.....	1920	1923

LINCOLN COUNTY SOCIETY

President: Cornwell, A. M., Lincolnton; Geo. Washington Univ., 1927.....	1927	1928
Secretary: McGuire, B. B., Lincolnton; Jeff. Med. Coll., 1918; U. N. C.....	1919	1928
Bandy, W. G., Lincolnton; Vanderbilt Univ., 1908.....	1912	1914
Costner, W. V., Lincolnton; Jeff. Med. Coll., 1924; U.N.C.....	1925	1927
Crowell, L. A., Jr., Lincolnton; Tulane, 1930; U.N.C.....	1930	1930
Crowell, L. A., Sr., Lincolnton (Hon.); Balt. Med. Coll., 1892.....	1892	1898
Davidson, John E. S., Charlotte (Hon.).....	1898	
Edwards, Forrest D., Lawndale; Atlanta Med. Coll., 1914.....	1916	1919
Elliott, W. F., Lincolnton; Pa. Medico-Chir. Coll., 1916; U.N.C.....	1916	1917
Fitzgerald, J. H., Jr., Lincolnton; Univ. of Va., 1938.....	1940	1941
Gamble, J. R., Lincolnton; Univ. of Tenn., 1911.....	1911	1912
Hoover, C. H., Crouse (Hon.); Balt. Med. Coll., 1903; Chattanooga Med. Coll., 1900.....	1903	1903
Jacocks, W. P., Delhi, India; Univ. of Pa., 1911; U. N. C.....	1911	1913
Wilson, S. A., Alexandria, La.; Emory Univ., 1937.....	1937	1940

MACON-CLAY COUNTIES SOCIETY

Angel, Furman, Franklin; Jeff. Med. Coll., 1918; U. N. C.....	1923	1924
Killian, Frank M., Franklin; Univ. of Louisville, 1929.....	1929	1930
Rogers, W. A., Franklin (Hon.); Univ. of Nashville, 1898.....	1898	1898
Staton, L. R., Haysville; Univ. of Md., 1929.....	1929	1940

MADISON COUNTY SOCIETY

MARTIN-WASHINGTON-TYRRELL COUNTIES SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President:		
Secretary: Williams, John W., Williamston; Univ. of Md., 1906;		
U. N. C.	1906	1906
Bray, T. L., Plymouth; Univ. of Md., 1916	1916	1917
Brown, Victor E., Williamston; Syracuse Coll. of Med., 1935	1936	1937
Chaplin, S. C., Columbia; Jeff. Med. Coll., 1922; Wake Forest, 1920	1931	1933
Llewellyn, J. T., Williamston; Med. Coll. of Va., 1937	1939	1941
McAllister, Russell, Williamston; Med. Coll. of Va., 1937	1938	1939
McGowan, Claudius, Plymouth; Med. Coll. of Va., 1917	1917	1922
Nelson, Robert J., Robersonville (Hon.); Louisville Med. Coll., 1890	1890	1893
Phelps, J. M., Creswell; Jeff. Med. Coll., 1932	1932	1935
Pittman, E. E., Oak City; Med. Coll. of Va., 1919	1919	1920
Rhodes, James S., Williamston (Hon.); Med. Coll. of Va., 1906	1906	1907
Saunders, Jos. H., Williamston (Hon.); Univ. Coll. of Med., 1905;		
U. N. C.	1905	1906
Walker, E. T., Williamston; Univ. of Kansas, 1937	1939	1940
Ward, Jesse E., Robersonville (Hon.); Univ. of Md., 1904; U.N.C.	1904	1905
Ward, Vernon Albert; Robersonville; Jeff. Med. Coll., 1908; U.N.C.	1908	1914

McDOWELL COUNTY SOCIETY

President: Miller, J. F., Marion; Med. Chi., Philadelphia, 1906	1915	1919
Secretary: Hagna, L. W., Marion; Univ. of Pa., 1936	1938	1940
Ashworth, B. L., Marion (Hon.); Coll. of P. & S., Balt., 1893	1893	1900
Butt, R. B., Marion; Emory Univ., 1920	1920	1921
Hemphill, C. H., Black Mountain; Univ. of Md., 1913	1913	1916
Johnson, John B., Old Fort; Univ. of Louisville, 1905	1914	1914
Jonas, John F., Marion (Hon.); Balt. Med. Coll., 1903	1903	1903
Justice, Gaston B., Marion (Hon.); Coll. of P. & S., Atlanta, 1907;		
U. N. C.	1907	1908
Kirby, Guy S., Marion (Hon.); Univ. Coll. of Med., 1897	1896	1903
McBee, Paul, Marion; Med. Coll. of Va., 1930; Wake Forest, 1928	1930	1933
McIntosh, D. M., Old Fort (Hon.); Med. Coll. of Va., 1904	1907	1908
McIntosh, D. M., Jr., Marion; Univ. of Pa., 1933	1935	1936
Wood, Frank, Marion; Univ. of Pa., 1928; U.N.C.	1931	1932
Wood, Martha, Marion; Univ. of Pa., 1928; U.N.C.	1934	1935

MECKLENBURG COUNTY SOCIETY

President: Sparrow, Thos. DeL., Charlotte; Univ. of Pa., 1920	1920	1923
Secretary: Alexander, J. M., Charlotte; McGill Univ., 1934; U. N. C.	1934	1937
Adams, James R., Charlotte; Univ. of Va., 1928	1932	1933
Adams, W. B., Charlotte; Washington Univ., 1932	1940	1941
Alexander, James R., Charlotte (Hon.); Univ. of Md., 1894	1894	1899
Allan, William, Charlotte (Hon.); Coll. of P. & S., Balt., 1906	1906	1908
Ashe, J. R., Charlotte; Columbia Univ., 1911	1915	1915
Austin, D. R., Charlotte; Jeff. Med. Coll., 1917; U.N.C.	1917	1919
Austin, Frederick D., Jr., Charlotte; Vanderbilt Univ., 1937	1937	1939
Baker, T. W., Charlotte; Univ. of Pa., 1931	1931	1938
Barron, A. A., Charlotte (Hon.); Vanderbilt Univ., 1909	1910	1911
Baxter, Oscar Dixon, Charlotte; Jeff. Med. Coll., 1924	1924	1929
Bellows, Rowland T., Charlotte; Cornell, 1930	1940	1941
Black, Geo. William, Charlotte; Med. Coll. of Va., 1924	1924	1925
Blair, Andrew, Charlotte; Univ. of Pa., 1924	1925	1926
Bost, T. C., Charlotte; Geo. Washington Univ., 1915	1920	1921
Bradford, W. B., Charlotte; Univ. of Pa., 1932	1932	1937
Bradford, W. Z., Charlotte; Univ. of Pa., 1928	1928	1930
Brantley, Thos. H., Charlotte; Med. Coll. State of S. C., 1936	1936	1939
Brenizer, A. G., Charlotte (Hon.); Johns Hopkins, 1908; Univ. of Heidelberg; U. N. C.	1911	1911
Britt, C. S., Beaufort, S. C.; Emory Univ., 1920	1925	1926
Bunch, Charles, Charlotte; Univ. of S. C., 1931	1931	1935
Byrnes, Thos. H., Charlotte; Med. Coll. of S. C., 1926	1932	1932
Calder, D. G., Jr., Charlotte; Univ. of Pa., 1936	1940	1941
Choate, A. B., Charlotte; Med. Coll. of Va., 1929	1929	1933
Cornell, W. S., Fort Bragg, N. C.; Emory Univ., 1931	1938	1938
Craven, W. W., Charlotte (Hon.); Univ. of Md., 1903; U. N. C.	1904	1911
Daniel, Walter E., Charlotte; Med. Coll. of Va., 1931	1938	1938
De Armon, J. McC., Charlotte (Hon.); Univ. of Md., 1886	1886	1887
Donnelly, Jno., Charlotte; Univ. of N. C., 1905	1905	1919

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Elliott, J. A., Charlotte; Univ. of Mich., 1914.....	1919	1920
Faison, Elias, Charlotte; Emory Univ., 1929.....	1929	1933
Ferguson, R. T., Charlotte; Med. Coll. of Va., 1906.....	1909	1922
Fleming, L. E., Charlotte; Univ. of Pa., 1931; Wake Forest, 1929.....	1931	1934
Franklin, Ernest W., Charlotte; Univ. of Pa., 1930; U. N. C.....	1930	1932
Gage, L. G., Charlotte; Univ. of Va., 1915.....	1921	1922
Gallant, Robert M., Charlotte; N. C. Med. Coll., 1915.....	1915	1916
Gaul, John Stuart, Charlotte; Medico-Chiru., Phila., 1913.....	1922	1923
Gay, Charles H., Charlotte; Duke Univ., 1933.....	1936	1938
Gibbon, James W., Charlotte; Jeff. Med. Coll., 1918.....	1920	1921
Gibbon, Robert L., Charlotte (Hon.); Jeff. Med. Coll., 1887.....	1887	1888
Gilmour, Monroe T., Charlotte; Harvard, 1936.....	1940	1941
Hamer, Jerome B., Charlotte; Univ. of Ga., 1938.....	1938	1940
Hamer, W. A., Charlotte; Univ. of Md., 1930; Wake Forest, 1928.....	1930	1932
Hand, Edgar H., Charlotte; N. C. Med. Coll., 1907.....	1907	1913
Hart, V. K., Charlotte; Univ. of Pa., 1921.....	1924	1925
Hawes, Aubrey, Charlotte; Vanderbilt Univ., 1933.....	1939	1939
Herndon, Claude Nash, Jr., Charlotte; Jeff. Med. Coll., 1939.....	1939	1941
Hipp, Edw. R., Charlotte; Univ. of Va., 1918.....	1920	1921
Holton, Thos. J., Charlotte; Emory Univ., 1909.....	1925	1926
Houser, O. J., Charlotte; N. C. Med. Coll., 1914.....	1914	1916
Hovis, L. W., Charlotte (Hon.); N. C. Med. Coll., 1904; U.N.C.....	1904	1906
Hunt, J. S., Charlotte; Vanderbilt Univ., 1929.....	1932	1933
Hunter, W. Myers, Charlotte (Hon.); Georgetown Univ., 1905.....	1906	1906
Jacobs, J. E., Charlotte; Univ. of Nebraska, 1935.....	1939	1940
Johnston, J. G., Charlotte; Vanderbilt Univ., 1899.....	1913	1916
Jones, O. H., Charlotte; Columbia Univ., 1933.....	1933	1937
Kelly, Luther W., Charlotte; Univ. of Va., 1924.....	1926	1927
Kennedy, John P., Charlotte; Jeff. Med. Coll., 1915.....	1915	1920
Kimmelsteil, Paul, Charlotte; Tuebingen, Germany, 1922.....	1940	1941
King, Parks M., Charlotte (Hon.); Bellevue Med. Coll., 1902.....	1902	1904
Kossove, Albert A., Charlotte; Med. Coll. of Va., 1939.....	1940	1941
Kossove, Irene L., Charlotte; Med. Coll. of Va., 1939.....	1940	1941
Lafferty, Robert H., Charlotte (Hon.); N. C. Med. Coll., 1906.....	1906	1906
Leinbach, Robert F., Charlotte (Hon.); Univ. of Pa., 1907; U.N.C.....	1907	1910
MacConnell, John W., Davidson (Hon.); Univ. of Md., 1907.....	1908	1909
Magill, Hugh B., Jr., Pineville; Emory Univ., 1935.....	1939	1939
Martin, Wm. F., Charlotte; Univ. of Md., 1920.....	1920	1923
Martin, W. J., Davidson; Univ. of Va., 1890.....	1891	1919
Massey, C. C., Charlotte; Jeff. Med. Coll., 1923; U.N.C.....	1923	1925
Mathews, Vann M., Charlotte; Univ. of Pa., 1918.....	1918	1921
Mathews, Wm. C., Davidson; Univ. of Va., 1937.....	1939	1939
Mayer, Walter B., Charlotte; Univ. of Pa., 1930.....	1932	1933
McCoy, Thos. M., Charlotte (Hon.); N. C. Med. Coll., 1905.....	1906	1906
McDonald, A. M., Charlotte; Univ. of Pa., 1928; U.N.C.....	1935	1937
McKav, Hamilton W., Charlotte; Jeff. Med. Coll., 1910; N. C. Med. Coll., 1909.....	1911	1913
McKay, Robert W., Charlotte; Johns Hopkins, 1923.....	1928	1928
McKnight, R. B., Charlotte; Univ. of Pa., 1920; U.N.C.....	1920	1928
McLaughlin, C. S., Charlotte (Hon.); Univ. of Md., 1896.....	1896	1903
McLaughlin, C. S., Jr., Charlotte; Univ. of Tenn., 1935.....	1937	1937
McLean, E. K., Charlotte; Univ. of Texas, 1919.....	1927	1928
McLesky, J. H., Charlotte; Univ. of Ga., 1909.....	1927	1928
McPhail, L. D., Charlotte (Hon.); Univ. of Md., 1900; U.N.C.....	1900	1902
Miller, Oscar L., Charlotte; Coll. of P. & S., Baltimore, 1921.....	1921	1922
Montgomery, J. C., Charlotte; Univ. of Pa., 1932.....	1935	1936
Moore, Alexander W., Charlotte; Bellevue Med. Coll., 1902; Univ. of Va., 1901.....	1912	1913
Moore, Oren, Charlotte; N. C. Med. Coll., 1911.....	1911	1912
Moore, R. A., Charlotte; Univ. of Pa., 1923.....	1924	1925
Motley, Fred Elliott, Charlotte; Univ. of Mich., 1922.....	1926	1927
Munroe, H. Stokes, Charlotte (Hon.); N. C. Med. Coll., 1902; Jeff. Med. Coll., 1903.....	1902	1904
Munroe, H. Stokes, Jr., Charlotte; Duke Univ., 1935.....	1937	1940
Myers, Alonzo, Charlotte; Bellevue Med. Coll., 1916; N. C. Med. Coll., 1911.....	1911	1920
Myers, John Q., Charlotte (Hon.); N. C. Med. Coll., 1904.....	1904	1904
Nalle, B. C., Charlotte (Hon.); Univ. of Va., 1903.....	1905	1905
Nance, C. L., Charlotte; N. C. Med. Coll., 1919.....	1921	1922
Naumoff, Philip, Charlotte; Duke Univ., 1937.....	1939	1939
Neblett, H. C., Charlotte; Med. Coll. of Va., 1914.....	1921	1929
Newell, Leon B., Charlotte (Hon.); Univ. of N. C., 1905.....	1905	1906
Newton, Howard L., Charlotte; Northwestern Univ., 1921.....	1923	1925

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Nisbet, D. Heath, Charlotte; Harvard Univ., 1917.....	1917	1920
Northington, J. M., Charlotte (Hon.); Med. Coll. of Va., 1905.....	1909	1909
Nowlin, Preston, Charlotte; Univ. of Va., 1924.....	1929	1930
Parsons, Philip B., Charlotte.....		1940
Peeler, Clarence N., Charlotte (Hon.); N. C. Med. Coll., 1906.....	1906	1908
Petteway, George H., Charlotte; N. C. Med. Coll., 1913.....	1913	1914
Pitts, Wm. R., Charlotte; Harvard Univ., 1933.....	1939	1940
Query, R. Z., Jr., Charlotte; Duke Univ., 1934.....	1937	1938
Rankin, Watson S., Charlotte (Hon.); Univ. of Md., 1901.....	1901	1901
Ranson, J. Lester, Charlotte; N. C. Med. Coll., 1911.....	1911	1912
Ray, F. L., Charlotte; Univ. of Va., 1919; Wake Forest.....	1919	1922
Reid, C. Graham, Charlotte; Univ. of Pa., 1935.....	1938	1939
Robinson, C. W., Charlotte; Univ. of Pa., 1930; U.N.C.....	1930	1932
Ross, Otho B., Charlotte; Univ. of Pa., 1909; U.N.C.....	1909	1912
Ross, T. W., Charlotte; Jeff. Med. Coll., 1927; U.N.C.....	1927	1930
Sanger, P. W., Charlotte; Vanderbilt Univ., 1931.....	1937	1938
Scruggs, W. Marvin, Charlotte; Univ. of Pa., 1914; Wake Forest, 1912.....	1914	1920
Seay, Hillis L., Huntersville; Vanderbilt Univ., 1930.....	1933	1934
Selby, W. E., Charlotte; Temple Univ., 1934; U.N.C.....	1934	1936
Shirley, H. C., Charlotte; Johns Hopkins, 1918.....	1921	1922
Shull, J. Rush, Charlotte; Univ. of Pa., 1910; U.N.C.....	1910	1913
Sloan, H. L., Charlotte; Univ. of Pa., 1911.....	1913	1920
Smith, F. C., Charlotte; Jeff. Med. Coll., 1921; U.N.C.....	1921	1925
Smith, Thos. A., Charlotte; N. C. Med. Coll., 1917.....	1917	1934
Squires, Claude B., Charlotte; Jeff. Med. Coll., 1919.....	1919	1921
Summerville, W. M., Charlotte; Emory Univ., 1936; U.N.C.....	1936	1937
Taylor, Andrew D., Charlotte; Univ. of Maryland, 1934.....	1934	1937
Taylor, H. C., Charlotte; Tenn. Med., 1886.....	1910	1920
Teasdale, L. R., Charlotte; Dalhousie Univ., 1936.....	1936	1940
Thompson, S. R., Charlotte; N. C. Med. Coll., 1914.....	1914	1915
Todd, L. C., Charlotte; Univ. of Mich., 1918.....	1920	1920
Tuggle, Alan, Charlotte; Univ. of Louisville, 1936.....	1940	1941
Trdeman, F. W. L., San Francisco, Cal.; N. C. Med. Coll., 1912.....	1912	1918
Wannamaker, Edward J., Jr., Charlotte; Univ. of Pa., 1921.....	1924	1925
Welton, David G., Charlotte; Univ. of Wisconsin, 1935.....	1939	1939
Whisnant, Albert M., Charlotte (Hon.); Coll. of P. & S., Balt., 1893.....	1893	1899
White, Thomas Preston, Charlotte; Univ. of Pa., 1922.....	1924	1925
Winkler, Harry, Charlotte; Rush Med. Coll., 1929.....	1931	1931
Wishart, Wm. E., Charlotte; N. C. Med. Coll., 1911.....	1911	1913

MITCHELL COUNTY SOCIETY

President: Gouge, A. E., Bakersville; Med. Coll. of Va., 1917.....	1917	1920
Secretary:		
McDuffie, James T., Spruce Pine; Coll. of Med. Evangelists, 1939.....	1939	1940
Peterson, C. A., Spruce Pine (Hon.); N. C. Med. Coll., 1907.....	1907	1908
Williams, L. L., Spruce Pine; Med. Coll. of S. C., 1880.....	1924	1927

MONTGOMERY COUNTY SOCIETY

Daligny, Charles, Troy (Hon.); Univ. of Paris, 1878.....	1889	1891
Harris, W. T., Troy; Med. Coll. of Va., 1925.....	1926	1927
Ingram, Charles B., Mt. Gilead (Hon.); Jeff. Med. Coll., 1886.....	1886	1892
Koogler, B. Robert, Star.....		1941
McMillan, J. M., Candor (Hon.); P. & S., Atlanta, 1909.....	1909	1911

MOORE COUNTY SOCIETY

President:		
Secretary: Rosser, R. G., Vass (Hon.); N. C. Med. Coll., 1909.....	1909	1911
Blue, A. McN., Carthage; Tulane, 1915.....	1916	1918
Bowman, H. E., Aberdeen (Hon.); N. C. Med. Coll., 1904.....	1904	1905
Chester, P. J., Southern Pines; N. C. Med. Coll., 1913.....	1913	1920
Cushing, J. G. N., Pinebluff; Jeff. Med. Coll., 1935.....	1940	1941
Davis, J. F., Hemp; Med. Coll. of Va., 1912.....	1912	1914
Felton, R. L., Jr., Carthage; Univ. of Pa., 1927; U.N.C.....	1927	1930
Kemp, Malcolm Drake, Pinebluff; Washington Univ., 1930; U.N.C.....	1930	1936
Marr, M. W., Pinehurst; Tufts, 1907.....	1909	1915
McLeod, A. H., Aberdeen (Hon.); Balt. Med. Coll., 1896; U.N.C.....	1896	1904
McLeod, Vida C., Southern Pines; Baylor Univ., 1919.....	1931	1931
Milliken, J. S., Southern Pines; Jeff. Med. Coll., 1915; U.N.C.....	1915	1916
Monroe, C. R., Pinehurst; Univ. of Md., 1924; U.N.C.....	1925	1930

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Mudgett, W. C., Southern Pines (Hon.); Md. Med. Coll., 1903.....	1908	1908
Overcash, W. E., Southern Pines; Univ. of Pa., 1926; U.N.C.....	1926	1934
Street, M. E., Glendon (Hon.); Coll. of P. & S., Balt., 1893.....	1893	1902
Symington, John, Carthage; Univ. of Md., 1902.....	1927	1928

NASH—SEE EDGECOMBE-NASH

NEW HANOVER COUNTY SOCIETY

President: Murchison, D. R., Wilmington; Johns Hopkins, 1916.....	1922	1923
Secretary: McEachern, Duncan R., Wilmington; Med. Coll. of Va., 1932; U.N.C.	1932	1935
Adair, W. E., Wilmington; Temple Univ., 1938; Wake Forest, 1936....	1938	1941
Anderson, E. C., Wilmington; Northwestern Univ., 1937.....	1937	1939
Barefoot, Graham B., Wilmington; Jeff. Med. Coll., 1923; Wake Forest, 1921	1923	1924
Barefoot, Wm. Frederick, Wilmington; Tulane, 1934.....	1934	1935
Bellamy, Robert H., Wilmington (Hon.); Jeff. Med. Coll., 1902; U.N.C.	1902	1902
Brown, Landis G., Southport.....		
Bulluck, Ernest S., Wilmington; Univ. of Md., 1911.....	1911	1912
Codington, H. A., Wilmington; Univ. of Md., 1911.....	1915	1917
Cranmer, J. B., Wilmington (Hon.); Univ. of N. C., 1905.....	1905	1906
Crouch, A. McR., Wilmington; Jeff. Med. Coll., 1916; U.N.C.....	1916	1918
Davis, C. B., Wilmington; Univ. of Pa., 1935.....	1935	1939
Dosher, Wm. S., Wilmington; Med. Coll. of Va., 1930.....	1930	1934
Elliott, A. H., Wilmington; Jeff. Med. Coll., 1919; U.N.C.....	1919	1921
Evans, J. E., Wilmington; Univ. of Md., 1916.....	1916	1921
Fales, Robert, Wilmington; Jeff. Med. Coll., 1932.....	1932	1936
Farthing, J. Watts, Wilmington; Univ. of Pa., 1933; Univ. of Miss., 1938	1938	1939
Fergus, Leroy, Southport; Med. Coll. of Va., 1935.....	1937	1938
Freeman, Jere D., Wilmington; Med. Coll. of Va., 1918.....	1921	1922
Graham, Charles, Wilmington; Harvard Univ., 1932; U. N. C.....	1932	1937
Hare, R. B., Wilmington; Med. Coll. of S. C., 1930.....	1933	1934
Harriss, Andrew H., Wilmington (Hon.); Med.-Chir. Coll., Phila., 1893	1892	1894
Hoggard, J. T., Wilmington; Univ. Coll. of Med., 1906.....	1906	1922
Hooper, Joseph W., Wilmington; Univ. of Md., 1909.....	1912	1917
Johnson, Geo. W., Wilmington; Univ. of Pa., 1920; U.N.C.....	1920	1921
Koonce, Donald B., Wilmington; Univ. of Pa., 1929.....	1929	1934
Koonce, S. Everett, Wilmington (Hon.); Coll. of P. & S., Balt., 1896	1896	1900
Lancaster, Wm. Jesse, Wilmington; Atlanta School of Med., 1911.....	1935	1935
Mebane, W. C., Jr., Wilmington; Univ. of Md., 1931; U.N.C.....	1932	1934
Moore, W. H., Wilmington (Hon.); Jeff. Med. Coll., 1910; U. N. C....	1910	1911
Robertson, James F., Wilmington; Univ. of Pa., 1913.....	1913	1916
Sidbury, J. B., Wilmington; Columbia Univ., 1912.....	1915	1916
Sloan, D. B., Wilmington; Univ. of Pa., 1914; U.N.C.....	1914	1920
Taylor, W. I., Burgaw (Hon.); N. C. Med. Coll., 1902.....	1904	1905
Walker, Elmer P., Wilmington; Emory Univ., 1936.....	1936	1941
Wessell, John C., Wilmington (Hon.); Univ. of Md., 1900.....	1900	1900
Wilcox, J. W., West End (Hon.); Univ. of N. C., 1906.....	1906	1906

NORTHAMPTON COUNTY SOCIETY

Cooke, Q. H., Rich Square; Univ. of N. C., 1905.....	1905	1934
Fleetwood, Jos. A., Conway; Tulane Univ., 1921.....	1921	1923
Lister, J. L., Jackson (Hon.); Med. Coll. of Va., 1896.....	1896	1909
Outland, R. B., Rich Square; Univ. of Pa., 1932.....	1933	1936
Parker, Walter Raleigh, Jackson; Med. Coll. of Va., 1916.....	1916	1919
Vaughan, J. C., Rich Square; Med. Coll. of Va., 1915.....	1915	1916

ONSLOW COUNTY SOCIETY

Corbett, J. P., Swansboro; Wash. Univ. Sch. of Med., 1928; U. N. C.	1928	1930
Gurganus, G. E., Jacksonville; Temple Univ., 1937.....	1937	1939
Henderson, John P., Jacksonville; Med. Coll. of Va., 1918.....	1919	1921
Stevens, H. W., Jacksonville; Jeff. Med. Coll., 1938.....	1938	1940
Sutton, Carl W., Richlands (Hon.); Tulane, 1905; U.N.C.....	1905	1907

ORANGE—SEE DURHAM-ORANGE

PAMLICO COUNTY SOCIETY

President: Dees, D. A., Bayboro (Hon.); Balt. Med. Coll., 1903.....	1903	1905
Secretary: Purdy, J. J., Oriental; Med. Coll. of Va., 1900.....	1914	1915
McCotter, St. Elmo, Bayboro (Hon.); Coll. of P. & S., Atlanta, 1908....	1908	1909

PASQUOTANK-CAMDEN-CURRITUCK-DARE COUNTIES SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President:		
Secretary: Bailey, M. H., Elizabeth City; Northwestern Univ., 1931	1933	1940
Barkwell, J. H., Weeksville; Atlanta Sch. of Med., 1908	1924	1925
Fearing, Isaiah, Elizabeth City (Hon.); Coll. of P. & S., Balt, 1896	1896	1904
Gill, Jos. A., Elizabeth City; Syracuse Univ., 1932	1932	1936
Griggs, W. T., Poplar Branch (Hon.); Univ. of Va., 1896	1896	1901
Johnston, W. W., Manteo; N. C. Med. Coll., 1913	1913	1915
Owens, Z. D., Elizabeth City; Univ. of Md., 1930	1930	1940
Peters, W. A., Elizabeth City; Med. Coll. of Va., 1915	1915	1916
Walker, H. D., Elizabeth City (Hon.); Univ. of Md., 1902	1902	1902
White, W. H. C., Elizabeth City; Univ. of Va., 1922	1929	1930

PENDER COUNTY SOCIETY

PERQUIMANS—SEE CHOWAN-PERQUIMANS

PERSON COUNTY SOCIETY

President:		
Secretary: Allen, A. L., Roxboro; Med. Coll. of S. C., 1933	1934	1935
Beam, H. M., Roxboro; Columbia Univ., 1918; Wake Forest	1918	1919
Fitzgerald, J. D., Roxboro; Duke Univ., 1934	1934	1937
Gentry, Geo. W., Roxboro (Hon.); Univ. of N. C., 1910	1910	1911
Hedgpeth, E. M., Roxboro; Northwestern Univ., 1936; Wake Forest	1937	1938
Love, Bedford E., Roxboro (Hon.); Univ. of Md., 1904	1904	1905
Merritt, John H., Woodsdale (Hon.); Univ. of N. C., 1906	1907	1908
Nichols, Austin F., Roxboro (Hon.); Univ. of N. C., 1908	1908	1909
Thaxton, B. A., Roxboro; Jeff. Med. Coll., 1914	1914	1916

PITT COUNTY SOCIETY

President: Tucker, Earl Van, Grifton; Med. Coll. of Va., 1930; U.N.C.	1930	1935
Secretary: Aycock, E. Burtis, Greenville; McGill Univ., 1936	1936	1940
Armistead, D. B., Greenville; Med. Coll. of Va., 1931	1935	1936
Barrett, J. M., Greenville; Univ. of Pa., 1926; U.N.C.	1926	1928
Basnight, Thomas G., Stokes (Hon.); Univ. of Md., 1904; U.N.C.	1905	1907
Beasley, E. B., Fountain; Univ. of Pa., 1911; U.N.C.	1911	1915
Brooks, F. P., Greenville; Univ. of Mich., 1933; U.N.C.	1933	1935
Brown, W. M. B., Greenville; Med. Coll. of Va., 1929	1929	1931
Crisp, S. M., Greenville; Univ. of Pa., 1923; U.N.C.	1923	1926
Dixon, G. G., Ayden; Med. Coll. of Va., 1915; U.N.C.	1915	1917
Ennett, N. Thomas, Greenville; Med. Coll. of Va., 1907	1932	1934
Frizzelle, M. T., Ayden (Hon.); Univ. Coll. of Med., 1907	1907	1908
Garrenton, Connell, Bethel; Univ. of Pa., 1935; Wake Forest, 1933	1935	1937
Hemingway, J. D., Bethel; N. C. Med. Coll., 1915	1917	1941
Mewborn, J. M., Farmville; Med. Coll. of Va., 1932; U.N.C.	1932	1935
Nobles, Jos. E., Greenville (Hon.); Jeff. Med. Coll., 1899; U.N.C.	1899	1902
Pace, K. B., Greenville; Jeff. Med. Coll., 1914; U.N.C.	1914	1920
Skinner, Louis Cotton, Greenville (Hon.); Univ. of Md.	1901	1903
Smith, Joseph, Greenville; Med. Coll. of Va., 1914	1916	1920
Taylor, Chas. W., Fort Dix, N. J.; Med. Coll. of Va., 1933	1933	1935
Tyson, J. J. Alexandria, Va.; Med. Coll. of Va., 1928	1928	1930
Ward, Needham E., Greenville; Duke Univ., 1932; U.N.C.	1934	1934
Watson, Thomas M., Greenville; Tulane, 1919; Wake Forest	1919	1920
Winstead, J. L., Greenville; Univ. of Md., 1925; U.N.C.	1925	1930
Wooten, W. I., Greenville; Jeff. Med. Coll., 1920; U. N. C.	1920	1921

POLK COUNTY SOCIETY

President: Palmer, M. C., Tryon; Med. Coll. of S. C., 1910; U.N.C.	1911	1914
Secretary: Woody, Austin, Tryon; Univ. of Pa., 1937	1939	1940
Grady, Wm. Earle, Tryon (Hon.); Univ. of Md., Coll. of P. & S., Balt., 1894	1895	1899
Jervey, A. J., Tryon; Med. Coll. of S. C., 1905	1923	1926
Preston, John Z., Tryon; Temple Univ., 1934	1935	1937
Smith, D. L., Saluda; Med. Coll. of S. C., 1903	1926	1927

RANDOLPH COUNTY SOCIETY

President: Sykes, R. P., Asheboro; Tulane Med. Coll., 1929	1929	1931
Secretary: Fox, D. B., Randleman; Vanderbilt, 1937	1937	1941

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Barnes, J. T., Asheboro; Med. Coll. of Va., 1929.....	1929	1932
Cannon, Eugene B., Asheboro; Vanderbilt, 1937.....	1937	1941
Fritz, J. L., Asheboro; Temple Univ., 1936; U.N.C.....	1936	1938
Griffin, H. L., Asheboro; Med. Coll. of Va., 1926.....	1926	1928
Hubbard, Charles C., Farmer (Hon.); Jeff. Med. Coll., 1888.....	1890	1900
Joyner, Geo. W., Asheboro; Duke Univ., 1932.....	1937	1938
Redding, Alex. H., Cedar Falls (Hon.); Coll. of P. & S., Balt., 1887....	1889	1900
Smith, M. B., Ramseur; Univ. of Pa., 1938.....	1938	1940
Soady, J. H., Asheboro; McGill Univ., 1903; Toronto Univ., 1905.....	1924	1926
Sumner, G. H., Asheboro; Tulane, 1923; U.N.C.....	1923	1924

RICHMOND COUNTY SOCIETY

President: Webb, W. P., Rockingham (Hon.); Med. Coll. of S. C., 1897; U. N. C.....	1897	1904
Secretary: Henry, T. Boyce, Rockingham; Columbia Univ., Coll. of P. & S., N. Y., 1917; U.N.C.....	1920	1921
Bristow, C. O., Rockingham; Jeff. Med. Coll., 1918.....	1920	1921
Caddell, G. C., Hoffman; N. C. Med. Coll., 1912.....	1912	1930
Garrett, F. B., Rockingham; N. C. Med. Coll., 1912.....	1912	1914
Garrison, R. B., Hamlet; Univ. of Md., 1933; U.N.C.....	1933	1935
Hatcher, M. A., Hamlet; Med. Coll. of Va., 1918.....	1920	1921
Howell, W. L., Ellerbe; N. C. Med. Coll., 1910.....	1910	1912
James, W. D., Hamlet (Hon.); Jeff. Med. Coll., 1908; U.N.C.....	1908	1910
Kinsman, Henry F., Hamlet (Hon.); Univ. of Vermont, 1894.....	1897	1904
Long, Z. F., Rockingham; Univ. of Pa., 1928; U.N.C.....	1928	1930
McFadyen, Paul R., Jr., Rockingham; Univ. of Va., 1929.....	1929	1932
McIntosh, W. R., Rockingham; N. C. Med. Coll., 1913.....	1916	1917
Milham, C. G., Hamlet; Jeff. Med. Coll., 1927; U.N.C.....	1927	1930
Nicholson, N. G., Jr., Rockingham; N. C. Med. Coll., 1917.....	1917	1920
Parsons, W. H., Ellerbe; N. C. Med. Coll., 1916.....	1916	1919

ROBESON COUNTY SOCIETY

President: McIntyre, Stephen, Lumberton; Jeff. Med. Coll., 1928; Wake Forest, 1926.....	1928	1930
Secretary: Hedgpeth, Wm. Cary, Lumberton; Wake Forest, 1928; Northwestern Univ., 1933.....	1933	1936
Allen, G. C., Lumberton; Rush Med. Coll., 1932; U.N.C.....	1933	1934
Baker, Horace M., Lumberton; Harvard Univ., 1917.....	1919	1919
Beam, R. S., Lumberton; Jeff. Med. Coll., 1912; U.N.C.....	1912	1913
Bender, John, Red Springs.....	1937	1939
Benson, N. O., Lumberton; Univ. of Ga., 1930.....	1933	1934
Biggs, J. I., Lumberton; Northwestern Univ., 1932.....	1937	1938
Bowman, E. L., Lumberton; Med. Coll. of Va., 1914.....	1914	1916
Britt, J. N., Lumberton; Atlanta Med. Coll., 1914.....	1923	1924
Brown, J. P., Fairmont (Hon.); Univ. of Md., 1883.....	1889	1893
Bullock, D. D., Rowland; Med. Coll. of S. C., 1920.....	1927	1939
Carmichael, Thaddeus W., Rowland; Univ. of Ky., 1904.....	1911	1919
Currie, D. S., Parkton (Hon.); N. C. Med. Coll., 1906.....	1906	1906
Hardin, E. R., Lumberton; Univ. of Ga., 1911.....	1915	1920
Hedgpeth, L. R., Lumberton; Univ. of Md., 1933; Wake Forest.....	1933	1934
Hodgin, H. H., Red Springs (Hon.); N. C. Med. Coll., 1906; Univ. of Md., 1905.....	1906	1906
Holmes, A. B., Fairmont; Jeff. Med. Coll., 1910; U.N.C.....	1910	1914
Johnson, C. T., Red Springs; Jeff. Med. Coll., 1920; Wake Forest.....	1920	1922
Johnson, Thomas C., Lumberton (Hon.); Med. Coll. of Va., 1903.....	1903	1903
Kinlaw, M. C., Pembroke; Temple Univ., 1935.....	1936	1938
Knox, John, Lumberton (Hon.); Univ. of Md., 1906.....	1907	1907
Lihn, Henry, Fairmont; Jeff. Med. Coll., 1938.....	1940	1940
Martin, J. A., Lumberton; Med. Coll. of Va., 1915.....	1915	1917
Martin, T. A., Maxton; Univ. of Md., 1931.....	1939	1941
McAlister, H. A., Lumberton; Duke Univ., 1937.....	1937	1940
McClelland, Joseph O., Maxton; Med. Coll. of Va., 1908.....	1912	1913
McGrath, F. B., Lumberton; Northwestern Univ., 1933.....	1937	1938
McMillan, R. D., Red Springs; Univ. of Md., 1910; U.N.C.....	1911	1912
Nash, J. Fred, St. Pauls; N. C. Med. Coll., 1914.....	1914	1916
Ricks, Leonard E., Fairmont (Hon.); Med. Coll. of Va., 1896.....	1896	1898
Smith, John McNeill, Rowland (Hon.); Jeff. Med. Coll., 1908; U.N.C.....	1908	1909
Townsend, R. G., St. Pauls; Tulane, 1927.....	1927	1934
Weinstein, M. H., Fairmont; Northwestern Univ., 1936.....	1937	1938
Weinstein, R. L., Fairmont; Jeff. Med. Coll., 1936.....	1936	1938

ROCKINGHAM COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Barham, B. Francis, Mayodan; Wash. Univ., 1939.....	1939	1941
Secretary: Taylor, Vernon W., Jr., Madison; Jeff. Med. Coll., 1938....	1938	1941
Byrd, Allen L., Leaksville; Jeff. Med. Coll., 1936.....	1936	1937
Casteen, Kenan, Leaksville; Bellevue Med. Coll., 1918; Wake Forest, 1916	1919	1921
Cozart, B. F., Reidsville; Med. Coll. of Va., 1931.....	1931	1931
Cummings, M. P., Reidsville; Jeff. Med. Coll., 1911; U.N.C.....	1911	1913
Dillard, G. P., Draper; Bennett Med. Coll., 1916.....	1916	1919
Ferneyhough, W. T., Reidsville; Univ. of Md., 1916.....	1926	1927
Fetzer, Paul W., Reidsville; Univ. of Va., 1916; U.N.C.....	1916	1920
Fryer, Douglas H., Leaksville; Univ. of Western Ontario, 1933.....	1940	1941
Fulp, J. F., Stoneville; Duke Univ., 1935.....	1937	1940
Hester, William S., Reidsville; Jeff. Med. Coll., 1926; U.N.C.....	1929	1930
Johnson, G. F., Spray; Jeff. Med. Coll., 1934.....	1934	1938
Johnson, W. A., Reidsville (Hon.); N. C. Med. Coll., 1907.....	1909	1910
Klenner, Fred R., Reidsville; Duke Univ., 1936.....	1937	1940
Matthews, Wm. W., Leaksville; Chicago Coll. of Med. and Surgery, 1913	1915	1916
McAnally, James McG., Reidsville; Univ. of Pa., 1927; U. N. C.....	1927	1928
McGehee, John Wm., Reidsville (Hon.); Univ. of Md., 1904.....	1904	1905
Pace, Samuel E., Leaksville; Jeff. Med. Coll., 1932.....	1932	
Price, H. H., Draper; Temple Univ., 1938.....	1938	1940
Ray, John B., Leaksville (Hon.); Balt. Med. Coll., 1898.....	1898	1898
Ray, S. P., Leaksville; Univ. of Pa., 1929; U.N.C.....	1929	1931
Tuttle, A. F., Spray (Hon.); N. C. Med. Coll., 1901.....	1901	1906
Tyner, Carl V., Leaksville; Bellevue Med. Coll., 1916; Wake Forest, 1914	1916	1919
Watson, Paul S., Madison; Med. Coll. of S. C., 1928.....	1928	1928
Wilson, Newton G., Madison; N. C. Med. Coll., 1914.....	1914	1915

ROWAN COUNTY SOCIETY

President: Plyler, R. J., Salisbury; Univ. of Md., 1921.....	1924	1925
Secretary: Frazier, J. W., Salisbury; Jeff. Med. Coll., 1924.....	1924	1927
Armstrong, C. W., Salisbury; Univ. of Md., 1914.....	1914	1915
Black, O. R., Landis; N. C. Med. Coll., 1914.....	1914	1918
Brown, Clarence E., Salisbury; N. C. Med. Coll., 1918.....	1920	1921
Busby, G. F., Salisbury; Johns Hopkins, 1932.....	1932	1936
Byrley, Andrew B., Cooleemee, (Hon.); Univ. Coll. of Med., 1896; U. N. C.....	1896	1904
Clement, Edward B., Salisbury (Hon.); Jeff. Med. Coll., 1906; U.N.C.....	1906	1913
Coffey, James C., Salisbury; Emory Univ., 1937.....	1937	1940
Coleman, L. A., Salisbury, Univ. of Ala., 1912.....	1927	1935
Eagle, J. C., Spencer; Jeff. Med. Coll., 1923; U.N.C.; Wake Forest, 1921	1923	1925
Field, B. Lewis, Salisbury; Med. Coll. of Va., 1931.....	1933	1939
Flemming, Giles M., Cleveland; Emory Univ., 1919.....	1919	1921
Kavanagh, W. P., Cooleemee; Duke Univ., 1935.....	1938	1939
Long, Wm. Matthews, Mocksville; Tulane, 1933.....	1934	1934
Lowery, John R., Salisbury; Univ. of Md., 1904; U.N.C.....	1904	1913
Marsh, Frank B., Salisbury; Jeff. Med. Coll., 1919; U.N.C.....	1919	1922
McCutchan, Frank, Salisbury; Univ. of Va., 1920.....	1927	1928
McKenzie, B. W., Salisbury; Jeff. Med. Coll., 1916; U. N. C.....	1916	1920
Mock, C. Glenn, Salisbury; Univ. of Pa., 1935.....	1935	1938
Monk, Henry L., Salisbury (Hon.); Med. Coll. of Va., 1899; U.N.C.....	1899	1903
Moorefield, R. H., North Kannapolis; Med. Coll. of Va., 1936.....		1941
Newman, H. H., Salisbury; Johns Hopkins, 1913.....	1914	1916
Peeler, John H., Salisbury (Hon.); Univ. Coll. of Med., 1899.....	1899	1904
Robertson, L. H., Salisbury; Univ. of Pa., 1929; U. N. C.....	1929	1931
Seay, T. W., Spencer; Univ. of Md., 1921.....	1922	1924
Shafer, Irving E., Salisbury; N. C. Med. Coll., 1914.....	1914	1914
Sigman, Frederick G., Spencer (Hon.); Univ. Coll. of Med., 1909.....	1909	1910
Slate, Wesley C., Spencer (Hon.); Univ. of Tenn., 1903.....	1903	1904
Spencer, Frederick B., Salisbury (Hon.); Univ. of N. C., 1909.....	1909	1911
Washburn, J. M., Lake Lure; Northwestern, 1899; U. N. C.....	1934	1936
West, Robert M., Salisbury (Hon.); Med. Coll. of Va., 1900.....	1900	1904
Whicker, Max E., China Grove; Univ. of Md., 1932.....	1932	1934
Woodson, Charles W., Salisbury (Hon.); Columbia Univ., Coll. of P. and S., N. Y., 1904.....	1905	1907

RUTHERFORD COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Head, W. T., Campobello, S. C.; Atlanta Coll. P. & S., 1911	1911	1923
Secretary: Glenn, C. F., Rutherfordton: Univ. of Louisville, Ky., 1914	1927	1928
Biggs, Montgomery H., Rutherfordton (Hon.); Univ. of Pa., 1897.....	1907	1908
Bland, Charles A., Forest City; Med. Coll. of Va., 1935.....	1937	1938
Bostic, W. C., Jr., Forest City; Univ. of Pa., 1926; Wake Forest, 1924	1926	1927
Bostic, W. C., Forest City (Hon.); N. C. Med. Coll., 1905; Chattanooga Med. Coll., 1899	1905	1905
Crawford, Robert H., Rutherfordton: Johns Hopkins, 1914.....	1920	1921
Eaves, Rupert S., Rutherfordton: Med. Coll. of Va., 1932.....	1932	1933
Elliott, Wm. M., Forest City; Univ. of Ga., 1934.....	1934	1935
Gold, Charles F., Rutherfordton; Univ. of N. C., 1910.....	1910	1911
Harrill, L. B., Caroleen (Hon.); Chattanooga Med. Coll., 1897.....	1902	1904
Hudgins, H. A., Rutherfordton: Emory, 1936.....	1936	1939
Hunt, J. F., Spindale, Univ. of Tenn., 1900.....	1900	1912
Logan, F. W. H., Rutherfordton; N. C. Med. Coll., 1916.....	1916	1919
Lovelace, Thos. C., Henrietta; N. C. Med. Coll., 1917.....	1920	1920
Mitchell, L. P., Spindale, N. C.; Wash. Univ., 1938.....	1940	1941
Moss, G. O., Cliffside: Emory Univ., 1927; Wake Forest, 1925.....	1927	1929
Norris, Henry, Waverly Mills, S. C. (Hon.); Univ. of Pa., 1897.....	1907	1908
Rucker, Adin Adam, Rutherfordton (Hon.); Univ. of Md., 1908.....	1908	1909
Verner, Carl Hugh, Forest City; P. & S. Atlanta, 1912.....	1923	1927
Washburn, B. E., Rutherfordton; Univ. of Va., 1911.....	1912	1917
Wiseman, P. H., Avondale; Med. Coll. of Va., 1925.....	1925	1926

SAMPSON COUNTY SOCIETY

President: Williams, Jabez H., Clinton: Jeff. Med. Coll., 1920.....	1920	1922
Secretary: Starling, W. P., Roseboro; Med. Coll. of Va., 1933.....	1933	1936
Ayers, J. S., Clinton; Jeff. Med. Coll., 1932.....	1932	1937
Best, G. E., Clinton; Temple Univ., 1938.....	1938	1940
Brewer, J. Street, Roseboro; Jeff. Med. Coll., 1919; Wake Forest, 1917	1919	1921
Cox, S. C., Kerr; Med. Coll. of Va., 1935.....	1935	1937
Crumpler, Paul, Clinton (Hon.); Univ. of Tenn., 1907.....	1907	1908
Johnson, A. N., Garland; Univ. of Pa., 1933; U.N.C.....	1933	1935
Lee, J. Marshall, Newton Grove; Med. Coll. of Va., 1916.....	1920	1923
Matthews, James O., Clinton (Hon.); Univ. Coll. of Med., 1897.....	1897	1902
Moore, K. C., Newton Grove; Univ. of Mich., 1909.....	1909	1910
Nelson, W. H., Clinton; Temple Univ., 1934.....	1934	1936
Parker, Oscar L., Clinton; Med. Coll. of Va., 1918.....	1918	1919
Royal, D. M., Salemburg; Med. Coll. of Va., 1926; Wake Forest, 1924	1926	1928
Sessoms, E. T., Roseboro; N. C. Med. Coll., 1915.....	1915	1917
Sikes, Gibson L., Salemburg (Hon.); Univ. Coll. of Med., 1900.....	1900	1902
Sloan, Wm. H., Garland; Univ. of Md., 1916; U.N.C.....	1916	1920
Small, Victor R., Clinton; Ohio State Univ., 1916.....	1920	1921

SCOTLAND COUNTY SOCIETY

President: Reed, D. H., Wagram (Hon.); Geo. Wash. Univ., 1901.....	1904	1906
Secretary: Wilkes, Marcus B., Laurinburg; N. C. Med. Coll., 1912.....	1923	1923
Buchanan, L. T., Laurinburg; Jeff. Med. Coll., 1913; Wake Forest, 1911	1913	1918
Erwin, Evan A., Laurinburg; Med. Coll. of S. C., 1912.....	1912	1913
James, Albert W., Laurinburg; Jeff. Med. Coll., 1918.....	1918	1921
James, F. P., Laurinburg; Univ. of Pa., 1916; U.N.C.....	1916	1917
John, Peter, Laurinburg (Hon.); Univ. of Md., 1897; U.N.C.....	1897	1904
Livingston, Everett Alex. Gibson; Univ. of Md., 1912.....	1912	1913
Pate, James G., Gibson; Univ. of Pa., 1916; U.N.C.....	1916	1918
Summerlin, Harry, Laurinburg; S. C. Med. Coll., 1933.....	1933	1935

STANLY COUNTY SOCIETY

President:		
Secretary: Lapsley, A. F., Badin; Med. Coll. of Va., 1933.....	1936	1937
Allen, Jos. A., New London (Hon.); Univ. Coll. of Med., 1901.....	1901	1904
Bigler, V. L., Albemarle; Univ. of Pittsburg, 1925.....	1926	1927
Dickson, M. S., Oakboro; Med. Coll. of S. C., 1927.....	1927	1929
Dunlap, Lucius Victor, Albemarle (Hon.); Univ. of N. C., 1909.....	1909	1910
Gaskin, J. S., Albemarle; Med. Coll. of S.C., 1925.....	1929	1931
Gaskin, Lewis R., Albemarle; Med. Coll. of S. C., 1921.....	1924	1926
Gaskin, Madge B., Albemarle; Med. Coll. of S. C., 1926.....	1933	1934
Hathcock, Thomas A., Norwood (Hon.); Univ. of Md., 1893; U.N.C.....	1893	1904
Hill, Wm. Isaac, Albemarle (Hon.); Univ. of Md., Coll. of P. & S., Balt., 1897	1897	1904

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Hillborn, Caroline, Stanfield; Cleveland Hom. Med. Coll., 1913.....	1923	1939
Hillborn, R. R., Stanfield; Amer. Med. Miss. Coll., 1904.....	1923	1939
Laton, James F., Albemarle (Hon.); N. C. Med. Coll., 1904.....	1904	1910
McKenzie, Wayland N., Albemarle; Med. Coll. of Va., 1935.....	1935	1937
Outlaw, J. K., Albemarle; Syracuse Univ., 1923; Wake Forest, 1921....	1926	1934
Moore, D. Bain, Badin; Univ. Coll. of Med., 1913.....	1913	1915
Tally, B. T., Albemarle; Jeff. Med. Coll., 1921; Wake Forest, 1919....	1921	1922

STOKES—SEE FORSYTH

SURRY-YADKIN COUNTIES SOCIETY

President: Haywood, C. L., Jr., Elkin; Harvard, 1927.....	1929	1930
Secretary: Sykes, Charlie L., Pilot Mountain; Georgetown Univ., 1938	1938	1939
Ashby, E. C., Mt. Airy; Univ. of Pa., 1914.....	1914	1916
Bell, S. A., Cyle; Northwestern Univ., 1934.....	1935	1938
Britt, T. C., Mt. Airy; Jeff. Med. Coll., 1921; Wake Forest, 1919.....	1921	1925
Caldwell, Robert M., Mt. Airy; Univ. of Va., 1936.....	1938	1940
Flippin, J. M., Pilot Mountain (Hon.); Coll. of P. & S., Balt., 1884....	1893	1900
Flippin, Samuel T., Siloam (Hon.); N. C. Med. Coll., 1898.....	1898	1898
Franklin, R. B. C., Mt. Airy; Queens Univ., 1931.....	1938	1940
Johnson, J. R., Elkin; Med. Coll. of Va., 1927; Wake Forest, 1925....	1927	1929
Mitchell, R. C., Mt. Airy; Univ. of Pa., 1919; U.N.C.....	1921	1923
Reeves, G. F., East Bend; Med. Coll. of S. C., 1925.....	1925	1937
Rovall, M. A., Elkin (Hon.); Coll. of P. & S., Balt., 1885.....	1889	1904
Salmons, H. C., Elkin (Hon.); N. C. Med. Coll., 1904.....	1904	1908
Smith, R. E., Mt. Airy; Univ. of Pa., 1923; U. N. C.....	1923	1926
Woltz, John L., Mt. Airy; Sou. Med. Coll., 1897.....	1902	1904

SWAIN COUNTY SOCIETY

Bacon, Harold Lyle, Bryson City; Northwestern Univ., 1934.....	1935	1936
Holler, E. N., Bryson City; Tulane, 1922.....	1940	1941

TRANSYLVANIA COUNTY SOCIETY

Secretary: Sader, Juluis, Brevard; N. Y. Univ., 1928.....	1938	1939
Cliff, B. F., Brevard.....		1941
English, Edwin S., Brevard; Univ. of the South, 1901.....	1902	1904
Lynch, Geo. B., Brevard; Univ. of Md., 1914.....	1920	1923
Newland, Chas. L., Brevard; Med. Coll. of Va., 1927.....	1928	1932
Osborne, Joe E., Rosman; Med. Coll. of Va., 1930.....	1930	1930
Wilkerson, J. B., Brevard; Memphis Hos. Med. Coll., 1906.....	1923	1924

TYRRELL—SEE MARTIN-WASHINGTON-TYRRELL

UNION COUNTY SOCIETY

President: Ham, Clem, Monroe; Med. Coll. of S. C., 1926.....	1929	1930
Secretary: Love, Wm. M., Monroe; N. C. Med. Coll., 1915.....	1915	1919
Blair, M. P., Marshville (Hon.); Med. Coll. of Va., 1895.....	1895	1895
Bolt, C. A., Marshville; Med. Coll. of S. C., 1926.....	1929	1930
Faulk, J. G., Monroe; Med. Coll. of Va., 1931; Wake Forest, 1929.....	1931	1932
Garren, R. H., Monroe (Hon.); Univ. of Nashville, 1900.....	1901	1904
Gondelock, Jno. J., Monroe; Med. Coll. of S. C., 1923.....	1924	1924
Hardin, Parker C., Monroe; Harvard Univ., 1927.....	1937	1937
McLeod, John Purl Utley, Marshville; Coll. of Med. Evangelists, 1939	1939	1940
Neal, John W., Monroe (Hon.); N. Y. Univ., 1884.....	1887	1904
Neese, K. E., Monroe; Washington Univ., 1929; U.N.C.....	1929	1934
Ormand, J. W., Monroe; Univ. of Cincinnati, 1926; U.N.C.....	1926	1928
Smith, G. M., Monroe; N. C. Med. Coll., 1914.....	1914	1919
Williams, Edward J., Monroe; Univ. and Bellevue Hosp. Med. Coll., 1917.....	1920	1921

VANCE COUNTY SOCIETY

President: Noel, W. W., Henderson; Johns Hopkins, 1929.....	1939	1940
Secretary: White, C. H., Henderson; Tulane, 1928.....	1930	1935
Rass, H. Hartwell, Jr., Henderson; Univ. of Pa., 1928; U.N.C.....	1929	1930
Fenner, Edwin F., Henderson (Hon.); Univ. of Md., 1905.....	1906	1907
Newell, H. A., Henderson (Hon.); Coll. of P. & S., Balt., 1906.....	1906	1906
Rollins, C. D., Henderson; Univ. of Pa., 1935; U. N. C.....	1935	1939
Rollins, Vance B., Henderson; Univ. of Pa., 1932; U.N.C.....	1932	1936
Unchurch, Robert T., Henderson; Jeff. Med. Coll., 1908; U.N.C.....	1908	1911
Wheeler, J. H., Henderson; Jeff. Med. Coll., 1918; U. N. C.....	1918	1920

WAKE COUNTY SOCIETY

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
President: Coleman, G. S., Raleigh (Hon.); Med. Coll. of Va., 1907....	1907	1908
Secretary: Sinclair, L. G., Raleigh; Univ. of Penn., 1933.....	1933	1939
Ashby, J. W., Raleigh; Univ. of Md., 1905.....	1921	1922
Bolus, Michael, Raleigh; Jeff. Med. School, 1934.....	1934	1938
Brian, Earl, Raleigh; Duke Univ., 1934.....	1936	1939
Broughton, A. C., Jr., Raleigh; Med. Coll. of Va., 1937.....	1937	1939
Buffaloe, J. S., Garner (Hon.); Balt. Med. Coll., 1900.....	1900	1904
Bugg, C. R., Raleigh; Johns Hopkins, 1922.....	1924	1926
Bulla, A. C., Raleigh; N. C. Med. Coll., 1915.....	1915	1918
Campbell, Alton C., Raleigh; Univ. of N. C., 1910.....	1910	1912
Caviness, V. S., Raleigh; Jeff. Med. Coll., 1921; U.N.C.....	1921	1926
Caviness, Zebulon M., Raleigh (Hon.); Univ. of N. C., 1903.....	1903	1903
Combs, Jos. J., Raleigh; Columbia Univ., Coll. of P. & S., N. Y., 1926	1926	1929
Cooper, G. M., Raleigh (Hon.); Univ. Coll. of Med., 1905.....	1905	1904
Cozart, W. S., Fuquay Springs; Med. Coll. of Va., 1914.....	1914	1917
Dewar, Wm. B., Raleigh; Univ. of Pa., 1920; U.N.C.....	1920	1923
Dickinson, K. L., Raleigh; Univ. of Minn., 1932.....	1935	1936
Eldridge, Chas. P., Raleigh; Univ. of Pa., 1926; U.N.C.....	1926	1928
Fields, James A., Raleigh.....		1941
Finch, O. E., Raleigh; Jeff. Med. Coll., 1915; U.N.C.....	1915	1917
Flowers, C. E., Zebulon; Med. Coll. of Va., 1913; U.N.C.....	1915	1916
Fox, P. G., Raleigh; Med. Coll. of Va., 1922.....	1923	1929
Fox, Robert Eugene; Raleigh; Univ. of Pa., 1926.....	1926	1929
Gibson, M. R., Raleigh (Hon.); Univ. of Md., 1905; U.N.C.....	1905	1906
Goodwin, O. S., Apex; Jeff. Med. Coll., 1923; U.N.C.....	1923	1926
Hall, Edgar M., Jr., Raleigh.....		1941
Hamilton, John H., Raleigh; Harvard Univ., 1916.....	1926	1926
Haywood, Hubert B., Raleigh (Hon.); Univ. of Pa., 1909.....	1909	1910
Herring, E. H., Raleigh; Univ. of Pa., 1930; Wake Forest.....	1930	1934
Hicks, V. M., Raleigh; Jeff. Med. Coll., 1918.....	1918	1922
Hill, Millard D., Raleigh; Med. Coll. of Va., 1928; Wake Forest.....	1928	1931
Hitch, Joseph M., Raleigh; Univ. of Va., 1933.....	1938	1939
Horton, Wm. C., Raleigh (Hon.); Coll. of P. & S., Balt., 1897.....	1896	1904
Hunter, J. P., Cary; Jeff. Med. Coll., 1919; Wake Forest.....	1919	1921
Jones, Carey C., Apex; Jeff. Med. Coll., 1920; Wake Forest, 1918.....	1920	1923
Judd, Eugene C., Raleigh; Univ. of Pa., 1911; U.N.C.....	1911	1912
Judd, Glenn B., Varina; Vanderbilt Univ., 1932; Duke Univ.....	1934	1935
Judd, James M., Varina (Hon.); Balt. Med. Coll., 1897.....	1897	1901
King, E. S., Winston-Salem; Jeff. Med. Coll., 1927; Wake Forest, 1925	1927	1930
Kitchin, Thurman D., Wake Forest (Hon.); Jeff. Med. Coll., 1908; U. N. C.	1908	1908
Knox, J. C., Raleigh; Univ. of Md., 1924.....	1924	1924
Lane, Bessie E., Raleigh; Woman's Med. Coll. of Pa., 1921.....	1921	1926
Lawrence, Ben J., Raleigh; Jeff. Med. Coll., 1918; U.N.C.....	1918	1920
Liles, L. C., Raleigh; Med. Coll. of Va., 1930; U.N.C.....	1930	1933
Lupton, E. S., Raleigh; N. Y. Univ., 1938.....	1938	1940
Mackie, Geo. C., Wake Forest; Univ. of Pa., 1928; Wake Forest, 1926	1928	1932
McGee, Robert L., Raleigh; Univ. of Pa., 1932.....	1932	1935
McLeod, N. H., Raleigh; Univ. of Pa., 1930; U.N.C.....	1930	1932
McManus, Hugh F., Raleigh; Med. Coll. of S. C., 1938.....	1938	1941
Mitchener, J. S., Raleigh; Johns Hopkins, 1915.....	1915	1917
Morehead, Robert P., Winston-Salem; Jeff. Med. Coll., 1936.....	1936	1938
Neal, Kemp P., Raleigh; Harvard Univ., 1917.....	1920	1921
Neal, Paul N., Raleigh; Harvard Univ., 1919.....	1920	1921
Noble, R. P., Raleigh (Hon.); Univ. of N. C., 1907.....	1907	1908
Oliver, A. S., Raleigh; Jeff. Med. Coll., 1914; U.N.C.....	1914	1919
Owen, J. F., Raleigh; Jeff. Med. Coll., 1920; Wake Forest, 1918.....	1920	1927
Peasley, E. D., Raleigh; Univ. of Iowa, 1927.....	1939	1940
Peters, David B., Raleigh.....		1941
Powers, Frank P., Raleigh; Univ. of Pa., 1927; Wake Forest, 1923.....	1927	1928
Procter, I. M., Raleigh; Univ. of Pa., 1915.....	1915	1917
Rand, E. G., Raleigh; Univ. of Pa., 1926; U.N.C.....	1926	1929
Ray, O. L., Raleigh (Hon.); Univ. Coll. of Med., 1899.....	1899	1904
Reavis, Chas. W., Raleigh; Med. Coll. of Va., 1936.....	1936	1938
Reynolds, C. V., Raleigh (Hon.); Univ. of N. Y., 1895.....	1895	1896
Rhodes, John S., Raleigh; Harvard Univ., 1929; U.N.C.....	1929	1936
Ritchie, Richard F., Raleigh; Univ. of Buffalo, 1927.....	1939	1940
Root, Aldert S., Raleigh; Univ. of Pa., 1911.....	1911	1913
Royster, C. L., Raleigh.....		1941
Royster, Hubert A., Raleigh (Hon.); Univ. of Pa., 1894.....	1894	1895
Ruark, R. J., Raleigh; Univ. of Pa., 1931.....	1931	1934

<i>Name and Address</i>	<i>Licensed</i>	<i>Joined State Society</i>
Smith, W. G., Wendell; Med. Coll. of Va., 1925; Wake Forest, 1923.....	1926	1928
Stimpson, R. T., Raleigh; Univ. of Pa., 1927; U.N.C.....	1927	1930
Strickland, W. M., Wendell; Med. Coll. of Va., 1919.....	1921	1923
Sykes, Ralph J., Raleigh; Med. Coll. of Va., 1934.....	1936	1936
Thompson, Hugh A., Raleigh; Univ. of Pa., 1914.....	1914	1917
Turner, H. G., Raleigh; Univ. of Pa., 1906; U.N.C.....	1907	1910
Umphlet, Thos. L., Raleigh; Univ. of Pa., 1934.....	1934	1939
Vann, H. M., Winston-Salem; Jeff. Med. Coll., 1917; Wake Forest, 1915	1920	1923
Wall, Roger I., Raleigh; Tulane, 1934.....	1934	1937
Ward, W. C., Raleigh; Univ. of Louisville; Wake Forest, 1929.....	1931	1934
Ward, W. T., Raleigh; Univ. of Md., 1925.....	1925	1927
Watson, James, Raleigh.....		1941
Webb, Alexander, Jr., Raleigh; Harvard, 1937.....	1940	1941
Weathers, R. R., Knightdale; Med. Coll. of Va., 1926; Wake Forest, 1924.....	1926	1928
West, Louis N., Raleigh; Jeff. Med. Coll., 1912; U.N.C.....	1912	1915
Wilkerson, Annie Louise, Raleigh; Med. Coll. of Va., 1938.....	1938	1939
Wilkerson, Charles B., Raleigh (Hon.); Univ. of N. C., 1906.....	1906	1908
Wilkinson, R. W., Jr., Wake Forest; Tulane, 1922; Wake Forest, 1920	1923	1924
Williams, Chas. F., Raleigh; Jeff. Med. Coll., 1934.....	1934	1937
Wilson, Frank, Jr., Raleigh; Univ. of Md., 1932; U.N.C.....	1932	1937
Wright, J. B., Raleigh (Hon.); Univ. Coll. of Med., 1899; U.N.C.....	1899	1900
Wright, Jas. R., Raleigh; Univ. of Md., 1940.....	1940	1940
Yarborough, Frank R., Cary; Univ. of Pa., 1923; U. N. C.....	1925	1926

WARREN COUNTY SOCIETY

President: Peete, C. H., Warrenton (Hon.); Univ. of Pa., 1903.....	1906	1906
Secretary: Foster, H. H., Norlina; Jeff. Med. Coll., 1919.....	1919	1923

WASHINGTON—SEE MARTIN-WASHINGTON-TYRRELL

WATAUGA-ASHE COUNTIES SOCIETY

Hagaman, J. B., Boone; Univ. of Tenn., 1915.....	1915	1917
Harmon, R. H., Boone; Med. Coll. of Va., 1936.....	1936	1936
Jones, D. C., Lansing; Univ. of Pa., 1927.....	1930	1930
King, Robert Rogers, Boone; Univ. of Ark., 1906.....	1931	1932
Perry, H. B., Boone; N. C. Med. Coll., 1905.....	1905	1922

WAYNE COUNTY SOCIETY

President: Whelpley, Frank L., Goldsboro; Univ. of Mo., 1902.....	1918	1919
Secretary: Clark, Milton S., Goldsboro; Emory Univ., 1937; U. N. C.....	1937	1939
Benton, Geo. Ruffin, Sr., Fremont; Med. Coll. of Va., 1901.....	1905	1904
Rest, D. E., Goldsboro; Univ. of Md., 1924; Wake Forest, 1922.....	1924	1926
Bizzell, M. E., Goldsboro; Tulane, 1923; U.N.C.....	1923	1925
Bizzell, T. M., Goldsboro; Univ. of Md., 1908.....	1908	1912
Cobb, Donnell R., Goldsboro; Univ. of Pa., 1921; U.N.C.....	1921	1926
Cobb, Wm. H., Goldsboro (Hon.); Jeff. Med. Coll., 1889.....	1889	1890
Crawford, W. J., Goldsboro; Med. Coll. of Va., 1922.....	1922	1923
Dale, G. C., Goldsboro; Univ. of Pa., 1925; U.N.C.....	1925	1927
Harrell, L. J., Goldsboro; Univ. of Md., 1930; Wake Forest.....	1930	1934
Henderson, C. C., Mt. Olive; Univ. of Md., 1914; U.N.C.....	1914	1919
Howard, C. E., Goldsboro; Univ. of Pa., 1925; U.N.C.....	1925	1927
Irwin, Henderson, Eureka; Univ. of Md., 1912.....	1914	1916
Ivey, H. B., Goldsboro; Univ. Coll. of Med., 1911; Wake Forest, 1909	1911	1917
Long, I. C., Goldsboro; Univ. of Md., 1923.....	1923	1937
McCuiston, A. M., Mt. Olive; N. C. Med. Coll., 1911.....	1911	1917
McPheeters, S. B., Goldsboro; Washington Univ., 1906.....	1933	1934
Miller, Robert B., Goldsboro (Hon.); Med. Coll. of Va., 1898; U.N.C.....	1900	1902
Pate, A. H., Goldsboro.....		1941
Person, Edgar Cooper; Pikeville (Hon.); Med. Coll. of Va., 1905.....	1905	1908
Rand, C. H., Fremont; Univ. of Pa., 1926; U.N.C.....	1926	1928
Rose, David J., Goldsboro; Tulane, 1922.....	1922	1924
Rose, James W., Pikeville; Tulane, 1928.....	1928	1931
Smith, W. C., Goldsboro; Univ. of Md., 1936.....	1936	1938
Smith, Wm. H., Goldsboro; Univ. of Pa., 1906; U.N. C.....	1907	1912
Stenhouse, Henry M., Goldsboro; Univ. of Colo., 1913.....	1937	1938

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Strosnider, Chas. F., Goldsboro; Univ. of Md., 1909.....	1910	1913
Sutton, Wm. G., Seven Springs (Hon.); Jeff. Med. Coll., 1889.....	1889	1904
Warrick, L. A., Goldsboro; Geo. Washington Univ., 1923; Wake Forest, 1920.....	1923	1924
Wilkins, J. W., Mt. Olive; Med. Coll. of Va., 1913; U.N.C.....	1913	1917
Woodard, A. G., Goldsboro (Hon.); Univ. of N. C., 1907.....	1907	1909
Zealy, A. H., Jr., Goldsboro; Harvard Univ., 1930.....	1932	1934

WILKES-ALLEGHANY COUNTIES SOCIETY

President: Bundy, William, North Wilkesboro; Vanderbilt, 1936.....	1936	1940
Secretary: Newton, Wm. K., North Wilkesboro; Med. Coll. of Va., 1931.....	1932	1933
Bentley, J. Gordon, Pores Knob; Univ. of Louisville, 1911.....	1938	1939
Eller, Albert J., Wilkesboro (Hon.); Coll. of P. & S., Balt., 1893.....	1895	1904
Gilreath, Frank H., N. Wilkesboro (Hon.); Univ. of Nashville, 1898....	1898	1898
Hubbard, Fred C., N. Wilkesboro; Jeff. Med. Coll., 1918; U.N.C.....	1919	1924
Hutchens, E. M., N. Wilkesboro (Hon.); N. C. Med. Coll., 1896.....	1896	1904
Long, L. L., Laurel Springs, Lincoln Mem. Univ., 1916.....	1916	1934
McNeill, James H., N. Wilkesboro; Geo. Washington Univ., 1926.....	1926	1927
Mitchell, G. T., Wilkesboro; Jeff. Med. Coll., 1927; U.N.C.....	1927	1928
Morris, John W., North Wilkesboro; Univ. of Va., 1936.....	1938	1938
Phillips, E. N., North Wilkesboro; Med. Coll. of Va., 1930.....	1930	1935
Sink, C. S., N. Wilkesboro; N. C. Med. Coll., 1912.....	1912	1913
Smith, Harold Benjamin, N. Wilkesboro; Med. Coll. of S. C., 1929.....	1929	1930
Thompson, C. A., Sparta; Med. Coll. of Va., 1924; Wake Forest, 1922	1924	1936
Triplett, W. R., Purlear; N. C. Med. Coll., 1914.....	1915	1920

WILSON COUNTY SOCIETY

President: Kerr, Jos. T., Wilson; Jeff. Med. Coll., 1935.....	1935	1940
Secretary: Goodwin, Cleon W., Wilson; Univ. of Pa., 1934.....	1934	1940
Anderson, Wade H., Wilson (Hon.); Univ. of Va., 1902.....	1904	1904
Bell, G. E., Wilson; Jeff. Med. Coll., 1921; Wake Forest.....	1921	1922
Best, Henry B., Wilson (Hon.); Univ. of N. C., 1907.....	1907	1908
Blackshear, T. J., Wilson; Emory Univ., 1914.....	1923	1924
Bradshaw, T. G., Wilson; Med. Coll. of Va., 1909.....	1924	1924
Clark, Badie T., Wilson; Univ. of Ga., 1930.....	1934	1935
Darden, D. B., Stantonsburg; Univ. of Pa., 1921; U. N. C.....	1924	1926
Dickinson, Elijah T., Wilson (Hon.); Med. Coll. of Va., 1895.....	1895	1900
Fike, Ralph L., Wilson; Med. Coll. of S. C., 1932.....	1933	1934
Herring, Tilghman, Wilson; Johns Hopkins, 1938.....	1938	1941
Hunter, W. C., Wilson; Univ. of Pa., 1928; U.N.C.....	1928	1931
McClees, E. C., Elm City; Med. Coll. of Va., 1917.....	1920	1920
Mitchell, Geo. W., Wilson; Univ. Coll. of Med., 1913.....	1913	1914
Pittman, M. A., Wilson; Jeff. Med. Coll., 1921; Wake Forest, 1919.....	1924	1923
Putney, R. H., Elm City; Med. Coll. of Va., 1914.....	1914	1920
Saliba, Michael M., Wilson (Hon.); Balt. Med. Coll., 1897.....	1910	1910
Simons, C. E., Wilson; Med. Coll. of Va., 1930; U. N. C.....	1930	1935
Sloan, Wm. S., Wilson; Vanderbilt Univ., 1933.....	1933	1935
Smith, A. Jones, Black Creek; Univ. of Pa., 1921; U.N.C.....	1921	1923
Strickland, Arthur T., Wilson; Washington Univ., 1932; U.N.C.....	1932	1935
Strickland, Ernest L., Wilson; Med. Coll. of Va., 1916.....	1916	1917
Williams, Albert F., Wilson (Hon.); Univ. of Md., 1901; U.N.C.....	1901	1904
Willis, H. C., Wilson; P. & S., Memphis, 1911.....	1916	1924
Woodard, C. A., Wilson (Hon.); Univ. of Va., 1904.....	1904	1909

YADKIN—SEE SURRY-YADKIN

YANCEY COUNTY SOCIETY

In Memoriam

WALTER W. SAWYER, M. D.

By I. Fearing, M.D.

Life in this world ends at last for every one. So, at midnight, October 20, 1940, there passed to the great beyond Dr. W. W. Sawyer.

Dr. Sawyer was born in Elizabeth City October 18, 1880. His early education was obtained from the schools of his native town. Entering the University of North Carolina in 1896 he graduated four years later. He then entered the University of Maryland School of Medicine where he graduated in 1903. The first few years of his medical life were spent at Shiloh, Camden County, North Carolina, doing general medicine. The specialty of eye, ear, nose, and throat seemed to appeal to him for his life's work, so in 1913 he went to New York City and for twelve months did work in this field under several noted specialists.

Dr. Sawyer, true to the love of home, located in Elizabeth City and practiced his specialty continuously until his death.

Dr. Sawyer was a member of the City Road Methodist Church and was active in church work. He took an active part in educational work, being a member of the Board of Trustees of Elizabeth City Graded Schools for a number of years. He held membership in his local, state, and national medical societies. He was progressive, always seeking the best in medicine for his patients.

Dr. Sawyer was a pioneer in his specialty in the Albemarle. Honest and most ethical, he was held in the highest esteem by the local profession. His manner of approach and his personality endeared him to a large clientele.

He is survived by his wife, who was Miss Margaret Williams, sister of the late Dr. C. B. Williams; a daughter, Mrs. Roland Payne of Charlotte; and a son, Walter Jr., who has just finished his second year in medicine at Temple University, Philadelphia.

It was my pleasure and joy to know Dr. Sawyer from early childhood. I valued him as a true friend. He is dead, but his spirit lives on.

Dr. Sawyer was a fitting personality for Shakespeare's words:

His life was gentle, and the elements
So mix'd in him that Nature might stand up
And say to all the world 'This was a Man!'

ANNOUNCEMENTS

SOUTHERN MEDICAL ASSOCIATION

ANNOUNCING CHANGE IN DAYS OF MEETING

The Southern Medical Association meeting will be held in St. Louis on Monday afternoon, Tuesday, Wednesday and Thursday, November 10-11-12-13 instead of Tuesday, Wednesday, Thursday and Friday forenoon, November 11-12-13-14, as previously announced.

Identification Cards for Diabetic Patients. — An identification card should be in the pocket of every diabetic patient. It is true that with protamine zinc insulin, reactions are less common than heretofore, but they may occur and the patients must not take any chances.—Elliott P. Joslin: *Diabetic Hazards*, New England J. Med. 224:589 (April 3) 1941.

APPOINTMENT OF MEDICAL STUDENTS IN THE MEDICAL ADMINISTRATIVE CORPS RESERVE

1. The letter of this office of May 26, 1941, (AG 210.1 Med-Res. 5-1-41 RB-A) Subject: Deferment of medical students, is rescinded, and this letter is substituted therefor.

2. Authority is granted to Corps Area Commanders to waive the provisions of Par. 5, Army Regulations 140-33, for the appointment in the lowest grade in the Medical Administrative Corps Reserve, after July 1, 1941, of physically qualified male citizens who are bona fide matriculants at approved medical schools within the United States and who have successfully completed the first two years of their medical education. Officers so appointed will be transferred to the War Department Reserve Pool and retained therein until eligible for appointment in the Medical Corps Reserve, or for action under Par. 3 (c) below.

3. (a) Appointment will be made without reference to an examining board as prescribed in Par. 20 c, AR 140-5, and without reference to the peacetime procurement objective for the Medical Administrative Corps Reserve.

(b) Applications, accompanied by report of physical examination, will be forwarded by the Dean of the medical school to The Commanding General of the Corps Area in which the school is located, together with a certified statement that the applicant has successfully completed the freshman and sophomore years of medical instruction and is an accredited matriculant in the junior or senior class in medicine at the institution. The certificate will state the prospective date of completion of the prescribed four-year course of medical instruction.

(c) Officers of the Medical Administrative Corps Reserve appointed under the provisions of this letter and transferred to the War Department Reserve Pool will be discharged from the Officers' Reserve Corps for the convenience of the government, under the following circumstances:

- (1) Discontinuance of medical education.
- (2) Matriculation in an unapproved school of medicine.
- (3) Failure to complete successfully the prescribed four-year course of medical instruction.
- (4) Failure to secure appointment in the Medical Corps Reserve within one year of the completion of the prescribed four-year course of medical instruction.

(d) The Surgeon General will maintain adequate records to assure timely application for appointment in the Medical Corps Reserve and transfer from the War Department Reserve Pool, and to assure discharge as provided above.

4. Transfer to the Medical Administrative Corps Reserve of Reserve officers of other branches who are studying medicine, dentistry, and veterinary medicine as authorized in AG letters dated April 17 and August 28, 1940, Subject: Special Mobilization Procedures for Procurement of Medical Department Reserve Officers who are Students in Approved Medical School (AG 210. 31 ORC 10-24-39 R-A) will continue as now authorized. Such transfer may be affected prior to actual matriculation provided the applicant has been accepted for enrollment by an approved school.

5. Appropriate publicity will be given the above authority by Corps Area Commanders, Department Commanders, and The Surgeon General. Properly qualified students will be invited to submit application for appointment, final approval in each case to be made by the War Department.

By order of the Secretary of War:

E. A. ADAMS, Major General,
The Adjutant General.

EXAMINATIONS AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada on Saturday, January 3, 1942, at 2:00 p. m. Candidates who successfully complete the Part I examinations proceed automatically to the Part II examinations held later in the year.

Applications for admission to Group B, Part I, examinations must be on file in the Secretary's office not later than October 6, 1941. Applications for Group A must be in the Secretary's office by March 1, 1941.

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the entire Board, meeting at Atlantic City, N. J., immediately prior to the 1942 meeting of the American Medical Association.

As previously announced in the Board booklet, this fiscal year (1941-1942) of the Board marks the close of the two groups of classification of applicants for examination. Thereafter, the Board will have only one classification of candidates, and all will be required to take the Part I and Part II examinations.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS

The distribution by The National Foundation for Infantile Paralysis of new grants totaling \$195,030 with which to carry on its battle to conquer infantile paralysis was announced Friday by Basil O'Connor, New York, president of the Foundation.

With several epidemics of the disease now making their appearance, the announcement is of particular significance, Mr. O'Connor said, because it assures the American people whose contributions make the Foundation possible that the fight against one of the most dreaded of modern diseases is being relentlessly carried on with all the resources that the Foundation can command in both the laboratories of the nation and in the communities where infantile paralysis has struck.

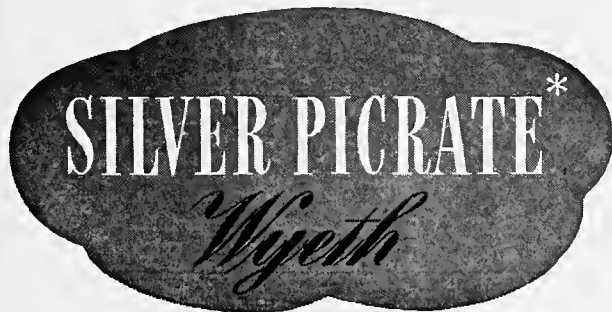
The importance of having the physician prescribe the proper diaphragm is stressed in a booklet, addressed to pharmacists, by the Holland-Rantos Company entitled "The Pharmacist Looks At Contraceptives".

The Holland-Rantos Company are the pioneers in advocating the diaphragm plus jelly method and have consistently maintained that diaphragms must be properly fitted by physicians.

This monograph is the latest promotion done by the company in its advocacy of "The Physician's Method".

For the local Treatment of Acute Anterior Urethritis

(DUE TO NEISSERIA GONORRHEAE)



A complete technique of treatment and literature will be sent upon request

*Silver Picrate is a definite crystalline compound of silver and picric acid. It is available in the form of crystals and soluble trituration for the preparation of solutions, suppositories, water-soluble jelly, and powder for vaginal insufflation.

Silver Picrate, Wyeth, has a convincing record of effectiveness as a local treatment for acute anterior urethritis caused by Neisseria gonorrhoeae.¹ An aqueous solution (0.5 percent) of silver picrate or water-soluble jelly (0.5 percent) are employed in the treatment.

1. Knight, F., and Shelanski, H. A., "Treatment of Acute Anterior Urethritis with Silver Picrate," Am. J. Syph., Gon. & Ven. Dis., 23, 201 (March), 1939.

JOHN WYETH & BROTHER, INCORPORATED, PHILADELPHIA

Believing that its position in the insulin industry could only be fully appreciated by a thorough knowledge of the factual background with respect to this field, E. R. Squibb and Sons today issued a statement in connection with its plea of *nolle contendere* filed and accepted in response to charges of price-fixing brought by the government in March, 1941 under the Sherman Act, thus disposing of this action.

E. R. Squibb and Sons together with C. H. Palmer, chairman of its board of directors, were named defendants, as were the two other manufacturers and distributors of insulin in the United States: Eli Lilly and Company and Sharp and Dohme, Inc., with certain of their officers. The government dropped its action against Dr. John F. Anderson, a vice-president of E. R. Squibb and Sons.

The statement by E. R. Squibb and Sons follows:

There are at present three licensees who manufacture and distribute insulin, Lilly, Sharp and Dohme and Squibb. We have no information regarding Lilly, but we are informed that Sharp and Dohme are at present selling below cost and for the year 1940 alone, Squibb suffered a loss of over \$20,000, on its insulin sales as established by an audit prepared by an independent firm of certified public accountants. Moreover, for the ten year period from 1931, profit to Squibb was equivalent to less than 5 per cent of its gross sales.

Until recently, there was a fourth manufacturer of insulin. But because of extreme competition in this field, this manufacturer was forced to drop its insulin business.

The cost of the glands used in the manufacture of insulin has increased 60 per cent since 1925 and 30 per cent since 1931. Despite this increase in the cost of glands, improvements in the costs of manufacturing methods have reduced the total cost of manufacturing the product 30 per cent since 1931.

During the same period when manufacturing costs were being reduced 30 per cent, the selling price of

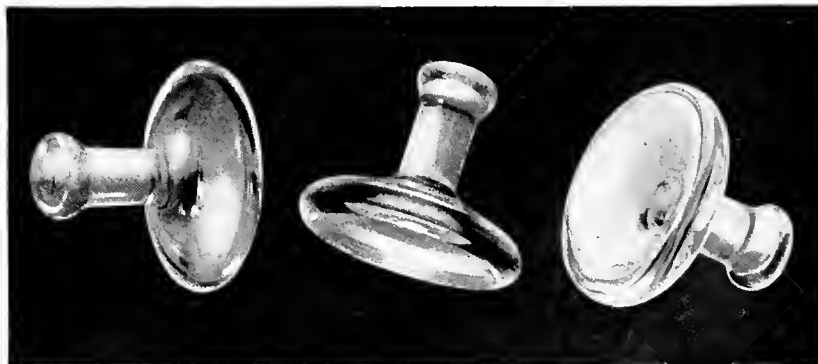
our insulin was reduced 75 per cent. A 10 cc 40 unit vial of insulin, the standard vial sold, sold for \$2.40 in 1925, \$2 in 1931 and at present sells for 57 cents. This means that the average cost of a daily dose to the majority of diabetics was 31 cents in 1931 and is 8 cents today.

The present low cost of insulin to the diabetic emphasizes the competitive conditions in the insulin field, and the fact that this field is not one in which Squibb is profitably engaged. The 1940 losses and the low percentage of profit over the last ten years reveal this clearly; and, in reality, there has been no profit over the last ten years, since research and promotion of the product have consumed a disproportionate amount of time on the part of Squibb's large technical and sales staffs.

The selling costs assigned to insulin in making up its profit and loss figures are merely with respect to volume of sales and not with respect to the total time involved in the promotion and development applied to this product. Large expenditures for research and promotion have not been charged against the cost of production; nor have any allowances been made for capital invested in our insulin plant, equipment, and inventory.

Moreover, the product itself has been substantially improved over the original unmodified insulin sold in 1925 and with the addition of protamine zinc insulin in 1937 and of zinc insulin crystals in 1938, other forms of insulin offering further advantages are being marketed. The last two improved products mean that a dose of insulin will last a diabetic for a much greater period of time and will furnish the diabetic with a more even dosage.

Squibb submits that it has presented to consumers most efficacious types of insulin at prices in every sense moderate and fair, and at the lowest possible cost commensurate with its high quality and standards of production and control.



Plexiglas

Gellhorn Type

Pessary

For Use in the Treatment of Inoperable Prolapse of the Uterus

The new Plexiglas Pessary is made of an unbreakable, crystal clear, translucent, light weight plastic material that is chemically inert. It can be sterilized by boiling as frequently as required. It is odorless, is unaffected by genital secretions, does not become pitted or discolored, and, being inert, sets up no chemical reaction to cause irritation to the vaginal mucosa.

Standard sizes 2 inches and 2½ inches Price \$2.75 each

Special sizes 2¼ in., 2¾ in. and 3 inches Price \$3.25 each

POWERS & ANDERSON, Inc., Surgical Instruments,
Richmond, Va. Norfolk, Va. Winston-Salem, N. C. Hospital Supplies, Etc.
Columbia, S. C.

NORTH CAROLINA MEDICAL JOURNAL

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VOLUME 2

SEPTEMBER, 1941

NUMBER 9

DEVELOPMENTS IN MEDICINE

FRANK H. LAHEY, M. D.

President, American Medical Association

BOSTON, MASS.

It is a great privilege to come here and talk to your Society. I feel quite at home, without affectation; and I have repeatedly said at the Southern Surgical Society, of which I have been a member for many years, that I feel qualified, at least by adoption, to be in some degree a Southerner. I have been coming to North Carolina and to this resort for a good many years, and I have a friendship for and an interest in Southern doctors.

I want to say just a few words about some of the problems that relate to medicine.

I listened to the address of your President with great interest, because it is of such excellent quality and because it brings up such important points. We have to deal with situations as they develop; and one of the situations we have to deal with, of course, is the changing aspect of medicine. Another is the rejection rate of selective service draftees. I have just had a letter from the Surgeon General of the Army, the Surgeon General of the Navy, and Dr. Parran of the Public Health Service. They report that 47 per cent of the draftees have been rejected. We have to look at these problems from the standpoint of public health. Those figures are not alarming to me because I know they represent critical care in the examination of the men selected for service. We know also that there is a large percentage of dental defects. We have had to be careful in this draft not to make the mistake made in the last war of taking those people who are psychologically sub-caliber and who become

wards of the government in later years. We are paying untold millions today for such people, who became disturbed under the conditions of war and thus became charges upon the Government.

I am unable to separate the economic problem as it relates to the indigent from the medical problem as it relates to the indigent. I believe that they can not be separated, and that they must be attacked together to solve the problem satisfactorily. After all, the simplest way when you have two seemingly unalterable courses, is to select the one more easy to alter. We have a number of people in the United States with a very low income. It has been said that it is impossible to alter this fact, but we can alter medicine. We have to take care that we do not alter it too much and do not alter it in a way we do not like. The nursing profession today is an outstanding example of what can happen when we alter economic conditions in a seemingly simple manner. It shows what can happen as a result of lack of economic foresight. If nurses do not look out they will educate and legislate themselves out of their job and will educate and legislate the practical nurse into their job. We are short of nurses. Why? Because we have raised the standard of nursing education so high and because we have closed many of the small schools. We are assigning the personal attentions of nurses, which have made them so desirable to you and me, to others. The warmth of friendship and gratitude that a patient feels toward a nurse will be lost if this personal service is detached. That will be a great pity.

The thing that has happened to the nursing profession should make us take care lest, by attempting to meet the problem in the easiest way, we lead ourselves into disaster. I am not trying to avoid the situation; I am trying only to be sure that we view this economic problem of the lack of medical care in its broadest aspect. I do not want us as doctors to avoid our responsibility, but I want us to be sure that what we do will be lasting and will be real in its accomplishment. Therefore let us group the economic problem of the person who does not have good living conditions and good food conditions—not enough fresh vegetables, not enough milk—with the problem of his medical care. That, I believe, is the right way to look at it.

Let us consider some of these problems of medical care and some of the criticisms made against medicine which relate to them. I personally feel that medical care insurance is a good plan. Medical care insurance should fulfill three requirements. First, and most important, is a free choice of doctors. Second, any insurance plan, to be sound, should be under the department of insurance, because no matter how small the amount to be spent each year it should be subject to the oversight to which the larger sums spent for life or other insurance are subject. Third, there should be an upper limit of income, in order that injustice is not worked on the doctor by those able to pay full fees. This is sound. This represents, I think, the attitude of organized medicine.

The very human quality of being more or less improvident is one reason for the existence of the so-called medically indigent class. Almost everyone, it seems to me, could, with a little care, get reasonably good medical attention by the hospital insurance plans.

Now we come to the criticisms of medicine. I should like to say just a few words about them, because you, as doctors, should have them in mind. The newspapers, as a rule, are readily critical of medicine. The lay people are critical of medicine. We find the frequent statement that doctors are reactionary, that they have not been in step with the times in the effort to provide means for the care of the so-called medically indigent. I think a great deal of this is due to the fact that the people who deal with this problem are philanthropists and social workers. They are not medical people. They do not look at the matter from the medical view-

point, and I despair of ever getting this in their minds. They look at medicine in terms of a commodity; you and I never look at medicine in terms of a commodity, because you and I know it can never be a commodity. There are thousands of reasons why it cannot be. A commodity is a tangible thing; it is money, bonds, trademarks, goods; it can be put under high pressure. You can sell it by mail; you can sell it by telegram. You can not sell medicine that way. The only capital of medicine is its total of knowledge. Its trustees do nothing in the way of making investments. The only investment its trustees make is to work and learn and to put their conclusions in the central bank of knowledge. These philanthropists and these social workers are involved in an economic life which is one of competition. There is no competition in medicine; the poorest medicine costs as much as the best. You and I want to protect the quality of medicine, and we are fearful lest these philanthropists and social workers ruin the thing that makes us want to practice medicine.

I fear hospital insurance because I fear its expansion. Why do I fear its expansion? Not because it would take anything from me personally, but because I fear it would cause medicine to lose its quality. I know we are confronting medicine under political control, and I shudder to think of it. I am astonished at the attitude of the national government. I am astonished that the national government thinks it can establish hospitals without establishing political control—perhaps not at first, but eventually. It has been the record that where medicine is governmentally sponsored it eventually becomes politically controlled. It is, I think, because of our fear of these new things that we are called reactionaries. For what do we practice medicine? Without being sentimental, I say that it is something inside us that makes us do it. I have written in my Presidential Address before the American Medical Association my admiration for the men whose faces I see all over the country who travel limitless miles to increase their knowledge of medicine. No one in this country has traveled more miles than I to increase his knowledge of medicine. Why do I do it? Because I like it. I work in the New England Baptist Hospital and in the New England Deaconess Hospital, and the ministers say that I may have an exhorter's license any time I want it. There is a price tag on everything in the

mind of a business man, but the great majority of us practice medicine because we like it. We desire medicine to continue to be competitive in quality. We ask only that it will be allowed to evolve. It can not be corrected artificially. If an economic experiment is tried and fails, all that is lost is money and time and goods. But medicine must be allowed to develop by evolution, as it has in the past, in order that the mistakes may be observed before they are too great and result in too great disaster. That is why we ask those people who have not lived in medicine and who do not know the intimate side of medicine not to destroy something great. What has this evolution accomplished in America? It has achieved the greatest and highest standard of medicine in the world and has done it so far, not with government interference, but by the stimulus from inside medicine itself. The best way to elevate medicine is not to legislate its elevation, not to force its elevation, but to elevate it by education—externally by education of the lay public as to what good medicine is, and internally by education of physicians as to what good medicine is. If we are given time, eventually, I am sure, we will make medicine what we all would like to have it.

The United States would never know the value of the American Medical Association and never appreciate it fully unless it were destroyed. In this way I have said the American Medical Association is like a good wife. She has to die to be appreciated. Until then she is a comfortable piece of furniture.

For the present let us forget all these difficulties. What about the suit against the American Medical Association? We will appeal it; and, whatever the outcome, it will be just a bump on the log of progress. We have something more important than suits ahead of us. We have a problem to be settled very soon: the decision of the country as to its position in the world today. We must decide that, and at not too late a day. We are in the period of debate. During this period of debate regarding what this country will do within the next few weeks, pray let everybody talk. Let us have free debate. Let us not have any names called because of the debate, if it is critical. Let us listen with care and interest to what is said, because this is a free country and people do not have to agree with you or with me until the decision is made. It must be made, and it must be made soon. When it is made the debate

period is over; then there is only one kind of Americanism and that is 100 per cent support, no matter what the decision is. Can we have national unity in the face of so much dissension? That is a problem that will have to be settled. Strikes, new deals, suits, personalities—they will take a second place. The thing that will be important then will be the question: How much do you think of your country and how much do you think of its future? We are hiding our heads in the sand. We must face facts. If we are going to make a mistake today in the face of possible calamity, let it be in over-estimating the danger. That will cost only money. Wherever I go I plead that this country wake up to the seriousness of the situation and the need of national effort and national unity.

THE WOMAN'S AUXILIARY

MRS. PAUL P. MCCAIN

SANATORIUM

For many years prior to 1923 wives and daughters attending State Medical Society meetings had talked of forming some kind of organization, but it was not until that year, under the presidency and sponsorship of the late Dr. John Wesley Long of Greensboro, that a definite organization—which is known as the Auxiliary to the Medical Society of the State of North Carolina—became a reality.

The purposes of the Auxiliary are worthy ones.

Our Constitution says: "The objects of the Auxiliary to the Medical Society of the State of North Carolina shall be to interpret the aims of the medical profession to other organizations interested in the promotion of health education; to assist in the entertainment at the meetings of the Medical Society of the State of North Carolina; to promote friendliness among the families of the medical profession; and to do such work as may be approved from time to time by the Advisory Committee of the Medical Society of the State of North Carolina."

Since we can say without boasting that doctors' wives are leaders in all church, civic and patriotic groups, we feel that a great opportunity is before us to interpret the aims and purposes of the profession so dear to our hearts. For example, a few years ago a member of our Auxiliary active in a county

Read before the First General Session, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

parent-teacher association was able to keep an osteopath from giving lectures in that county's schools. (The osteopath had sold her services by saying her talks would be limited to the need and place of proper exercises, but the doctor's wife knew better.) We have sponsored the sale of *Hygeia* and have placed it not only in doctors' homes and offices, but also in many school and public libraries.

We have a Loan Fund for doctors' children—which though not large has enabled many to attend college who otherwise would have been unable to do so. We are particularly happy that we have been able to assist several children of deceased doctors.

The main project, however, has been to maintain a bed at the North Carolina Sanatorium since 1929. Doctors and doctors' families are given preference, and after them, nurses, children and others in the order named. At present a nurse is on the bed. In 1940 a bed at the Western North Carolina Sanatorium was begun, and has been occupied from the beginning by a very fine young doctor. You will be delighted to know that this Cumberland County nurse and the Caldwell County doctor are improving very satisfactorily. We wish there were time to tell of the Wake County doctor and the many nurses, as well as others—some twenty-five in all—who have been returned to usefulness through the use of these beds.

The Auxiliary does many other things we could mention, but shall not do so now. We do want you doctors to realize, however, that the Auxiliary is doing some very, very fine work and to ask your interest and enthusiasm in setting up local and district units of our work. In some places we have very active groups that are very happy in the work they are doing—which happiness we covet for all doctors' wives in the state.

The speaker has been privileged to attend all but six meetings of the State Society since 1908—twenty-seven annual meetings—and has missed only one of the eighteen Auxiliary meetings. She can truly say that the Medical Society and its Auxiliary are very dear to her. And she would wish for each and every doctor's wife the genuine happiness that can come to one interested in the aims of the greatest profession on earth.

May we ask cooperation of the more than two thousand doctors in our Society in our goal of making the Auxiliary what it can and should be.

THE PHYSICAL STATUS OF THE SELECTIVE SERVICE DRAFTÉES

ELMUS D. PEASLEY, *Major, Medical Corps*
State Medical Officer, North Carolina
Selective Service System

Sufficient facts are now available upon which to base a preliminary report of the physical status of the nation's manpower within the Selective Service age. There has been no opportunity to make a detailed analysis, but definite trends seem to be predictable from the results to date.

On registration day, October 16, 1940, there were registered over sixteen million men between the ages of 21 and 36 who constitute a reservoir from which to recruit the necessary manpower for the development of an adequate national defense program. Physically qualified men are selected for military training for a period of one year, following which they will be on a reserve status for ten years. This present mobilization is a peace-time training program and fortunately has not been initiated under the duress of war. Consequently, the pressure of time has not been felt acutely, and many of the mistakes which occurred in the mobilization of 1917 have been largely avoided.

Much attention in this mobilization has been focused upon the elimination of registrants who have psychiatric defects. The present methods of warfare require greater emotional stability of the soldier than at any time in the past.

Colonel Rowntree, Chief of the Medical Division, National Headquarters, has said, "The medical division of the Selective Service System, scanning the record of World War mobilization, found an excellent 'story of accomplishment' but also, as a result of the induction of mentally unqualified recruits, a record of 'innumerable broken men and shattered lives, not in small and inconsequential numbers, but literally in the thousands'."

Every effort is being expended to prevent this in our present mobilization. There is no place in our armed forces for the "civilian misfit", who is frequently a borderline mental case.

North Carolina's share of the available manpower is shown in table 1.

Read before the Section on Public Health and Education, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

TABLE 1
North Carolina Registration
March 31, 1941

White	324,873	— 71.7%
Colored	128,428	— 28.3%
Total	453,301	—100.0%

Slightly more than one-fourth of the registrants are of the colored race, and this is approximately the same proportion that exists in the general population. Results of the classification by local Selective Service Boards is shown in table 2.

TABLE 2
North Carolina Classification
March 31, 1941

Class I	16,849	— 17.3%
Class II	1,432	— 1.5%
Class III	72,146	— 73.9%
Class IV	7,146	— 7.3%
Total	97,573	—100.0%

Class I constitutes those registrants who are now members of the land or naval forces of the United States or who are available for either general or limited military service in the future. Class II is composed of men necessary in a civilian capacity, but in only a few cases does such a deferment last more than a few months. Ordinarily deferment is for a period of time sufficient to allow another man to be trained as a replacement for the deferred registrant. Class III is composed of those registrants who have dependents. Class IV is made up of registrants who are not available for training. It is a heterogeneous group composed of men who have completed service, officials deferred by law, non-declarant aliens, ministers, conscientious objectors, and—the major portion of this class—those men who are illiterate or are physically, mentally, or morally unfit. With these facts in mind, it is obvious that a very large percentage of the registrants can be made available for military duty if the situation warrants. At the present time call has been made only for those in class I-A, which is composed of men that are physically qualified for general military service. The available manpower in this class will take care of the Army's need for personnel for at least two years. This class will be further augmented by a registration in the near future of those men who have become of age since October 16, 1940. This latter registration will naturally show a much larger percentage of class I-A registrants than the prior registration, since relatively few will have dependents.

Concerning the present procurement program, especially as regards physical standards, it is well to keep in mind the Selective Service regulation which defines the object of the physical examination: "The objective is to procure men who are physically fit for the rigors of general service. The registrant must be able to see well; have comparatively good hearing; have a heart able to withstand the stress of physical exertion; be intelligent enough to understand and execute military maneuvers, obey commands, and protect himself; and be able to transport himself by walking as the exigencies of military life may demand. Examining physicians will accordingly so construe these standards that the objective stated above may be realized." By way of amplification it may be added that despite the use of much mechanized equipment, the necessity for adequate physical endurance of the soldier in battle has not been in any way lessened. Men do not fight in trucks! A satisfactory soldier must still have sufficient strength and endurance to march twenty miles with full equipment, which weighs approximately 50 pounds, and arrive at his destination with sufficient reserve to give a good account of himself in battle. If we keep this objective and this picture in mind in evaluating the defects which are presented in the following tables, we will get a more accurate idea of the physical status of our registrants than would be otherwise possible. Only strong, healthy men can endure the rigors of general military service and they are the ones being chosen at this time.

Only men who are available for immediate duty are selected. Even though they may have easily remediable and rather minor defects, deferment is granted until the defect is remedied. From the training standpoint of the recruit, experienced Army officers regard the first two weeks after a man's induction as being the most important time concerning the matter of discipline, and they are strong in their conviction that if a man has to be hospitalized immediately upon his induction, the problem of proper discipline is increased many fold. We do not desire to induct men into the hospital!

The hospital facilities of any combatant force must be mobile and are designed to provide adequate care for battle casualties. Men who have inadequate stamina and endurance not only deplete the battle forces

but at the same time diminish the effectiveness of the hospital facilities of the command.

Table 3 shows the distribution of men who were potentially I-A prior to physical examination and their final classification based on the physical standards of the Selective Service Regulations.

TABLE 3			
After Physical Examination			
	North Carolina		U. S.
Class I General . .	13,239	— 60.5%	68.0%
Class I Limited . .	3,610	— 16.5%	12.0%
Class IV-F Physical	5,044	— 23.0%	20.0%
	21,893	100.0%	100.0%

Much of the discrepancy noted between the figures for North Carolina and those which obtain for the nation may be explained by the fact that the incidence of venereal disease in North Carolina exceeds that of the general average for the nation. Under the present Selective Service Regulations, venereal disease qualifies a registrant for limited service. His call for training is deferred until he has had adequate treatment of his disease by civil authorities.

The distribution of registrants as to age groups is indicated in Table 4.

TABLE 4					
Age	No.	%	Age	No.	%
18	1,273	.7	28	9,233	5.0
19	2,024	1.1	29	7,191	3.9
20	2,253	1.2	30	6,064	3.3
21	17,349	9.5	31	5,001	2.7
22	28,487	15.5	32	4,314	2.4
23	25,978	14.2	33	3,737	2.0
24	20,985	11.5	34	3,096	1.7
25	17,065	9.3	35	2,730	1.5
26	13,951	7.6	36	1,383	.8
27	11,084	6.1	Total . . 183,198		

It is noted that registrants who are 22 years of age make up the largest single group, comprising 15.5 per cent of the total. It may be further noted that 85 per cent are under 30 years of age. Three per cent are below the registration age and represent volunteers who have elected to take their military training at this time. In general, the age distribution is that which might reasonably be expected, as most of the older registrants have acquired dependents to some degree and there has been a longer exposure to the hazards of the industrial occupations. As a result of the physical examination of 65,000 men, there is shown in table 5 a rather complete analysis of the defects which excluded 21,025 of them from general military service.

TABLE 5						
Total Defects Found in Both Class I-B and Class II-F			Cause of Limited Service Classification (Class I-B)		Cause of Disquali- fication (Class II-F)	
	Number of Defects Found	Percent. of Total	Number of Defects Found	Percent. of Total	Number of Defects Found	Percent. of Total
1. Teeth	3,901	18.5	1,856	28.9	2,045	14.0
2. Eyes	2,220	10.6	1,158	18.0	1,062	7.3
3. Cardiovascular	2,115	10.1	266	4.1	1,849	12.7
4. Generally unfit	1,859	8.8	549	8.5	1,310	9.0
5. Musculo-skeletal	1,758	8.4	501	7.8	1,257	8.6
6. Obviously disqualified	1,506	7.2	—	—	1,506	10.3
7. Nervous and mental	1,313	6.2	67	1.0	1,246	8.5
8. Ears, nose and throat	936	4.4	188	2.9	748	5.1
9. Hernia	884	4.2	511	7.9	373	2.6
10. Lungs	812	3.9	134	2.1	678	4.7
11. Over and under weight	663	3.1	289	4.5	373	2.6
12. Feet	646	3.1	295	4.6	351	2.4
13. Syphilis	624	3.0	206	3.2	418	2.9
14. Genitalia	405	1.9	128	2.0	277	1.9
15. Endocrine	350	1.7	40	.6	310	2.1
16. Varicose veins	235	1.1	58	.9	177	1.2
17. Abdominal viscera	214	1.0	44	.7	170	1.2
18. Mouth and gums	149	.7	27	.4	122	.8
19. Skin	107	.5	21	.3	86	.6
20. Gonorrhea	107	.5	44	.7	63	.4
21. Hemorrhoids	91	.4	42	.7	49	.3
22. Over and under height	78	.4	2	.1	76	.5
23. Other defects	52	.3	6	.1	46	.3
	21,025	100.0	6,432	100.0	14,593	100.0

It is noted that teeth far outrank all other causes for rejection, constituting nearly one-fifth of all rejections. Eye defects and cardiovascular disease are the second and third causes for rejection respectively. The number of cases of arterial hypertension has been a surprise to most of us, especially when we consider the age group of men that are being examined. The men classified as "Generally unfit" were those who had three or more disqualifying defects or many non-disqualifying defects which when considered in totality were a sufficient cause for rejection. Those classed as being "obviously disqualified" were registrants who had obvious gross mental and physical defects and were rejected by local boards without physical examination.

Venereal Disease: The incidence of syphilis is presented in Table 6 and is approximately the same as that which obtained in the mobilization of 1917.

TABLE 6

Incidence of Syphilis

Selective Service Boards, Nov.-Dec. 1940
23 states—120,751 men
Rates per 1,000, based on
positive blood tests and clinical findings.

Group I**Average—7**

Minnesota, Wisconsin, North Dakota, Utah,
Nebraska, Rhode Island

Group II**Average—19**

Michigan, Ohio, Wyoming, New York, Montana, Kansas, Colorado, New Jersey

Group III**Average—61**

West Virginia, Alabama, Tennessee, Oklahoma, Maryland, North Carolina*

Group IV**Average 114**

Mississippi, Georgia, Florida, Louisiana

*133,117—Survey, October 16, 1940.

Surveys have been conducted in twenty-four states and reveal a marked geographical variation in the incidence. The highest incidence occurs in the states of the deep South, and the least in the most northern states. The largest factor in this distribution may be attributed to the higher percentage of colored people in the population as one goes progressively southward. Industrial areas also tend to increase the incidence somewhat. The results from North Carolina were obtained from a survey conducted by the State Department of Health in conjunction with the United States Public

Health Service. All doubtful and unsatisfactory tests were excluded. Results from other states were obtained in the course of conducting Selective Service examinations. More serological tests were performed in our state than in all of the other survey states combined. The analysis of the North Carolina survey is shown in table 7. It would indicate that 8.7 per cent of our registrants have positive serological tests.

TABLE 7
North Carolina Syphilis Survey
October, 1940

	No. tested	Positive	Percent Pos.
White . . .	75,437	1,463	1.94
Colored . .	55,443	10,005	18.04
Indian . . .	1,413	82	5.80
	132,293	11,550	8.7

Corrected percentage for all registrants—6.5%

Since the number of colored men examined is in excess of the percentage comprising the general registration, it is necessary to correct this figure. This gives an incidence in the state of 6.5 per cent.

The leading causes for rejection at the Induction Station at Fort Bragg of registrants who have been passed by the local board physicians is shown in table 8.

TABLE 8
Rejections—Induction Station

	Totals to March 31, 1941	February and March	
		White	Colored
Total Examined	6,263	2,908	952
Total Rejected	903—14.4%	355—12.2%	132—13.8%
Venereal Disease	97	17	69
Hernia	81	28	16
Otitis Media	77	48	4
Hypertension	72	31	7
Pes Planus	50	28	3
Deficient Vision	46	38	4
Insufficient Teeth	44	9	0
Pulmonary Tuberculosis	42	11	5
Tachycardia	33	17	2
Miscellaneous	361	128	22

It was to be expected that there should be a certain discrepancy between the findings of the local physicians and those of the Induction Station since physicians on the whole have had a purely clinical training and at the outset the military viewpoint was somewhat obscure in their minds. The rejections at the Induction Station are not to be construed as any reflection upon their professional qualifications. As time proceeds our

clinical physicians are readily acquiring the military viewpoint and are realizing what type of man it takes to make a satisfactory soldier.

It is noted that among the colored men in this state venereal disease exceeds all other causes for rejection combined.

The War Department has announced that a sampling of the findings by approximately one thousand Induction Boards in the nine Corps Areas indicates that the citizen called into the service in 1940 is generally much healthier than the 1917 recruit. Teeth defects are the greatest single cause for disqualification, and account for approximately three times as many as were found in 1917 proportionately. However, in most other categories the health statistics of the average trainee have taken a salutary leap upward during the twenty-three years. Lung, heart, muscular, bone, and foot defects have decreased more substantially than all other ailments. A slight increase in venereal disease as a cause for rejection has been noted. This rise is attributed, though, not to any increase in the incidence of such diseases, but to the laboratory tests now made to detect them. Where such diseases might have gone unnoticed in 1917, they are now discovered by the technician with his microscope. Rejections due to poor teeth and vision are distributed fairly uniformly throughout the United States. Lung ailments are lower in our Corps Area than in the average. Our Corps Area also has had a very low number of rejections due to mental and nervous conditions.

It may be said in conclusion that the process of mobilization has proceeded in an orderly and satisfactory manner. The brunt of this mobilization has been largely carried by many public-spirited citizens, among whom our profession as a class stands out. No other single group has been asked to contribute gratuitously so universally of their services, and there is certainly no group which has shown greater evidence of patriotism than ours. Those who have an opportunity to know of this contribution are not unmindful of it.

Due to the care exercised in the choice of citizens for our defense program, it is indicated that we will have armed forces which not only are more healthy than any mobilized in the past, but which will have adequate training in all of the principles of modern

warfare. They may be relied upon to defend and maintain the traditions of the United States of America.

MASSIVE HEMORRHAGE FROM THE STOMACH: ITS DIAGNOSIS AND TREATMENT

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WINSTON-SALEM

There are few medical emergencies more distressing or more dramatic than massive hemorrhage from the stomach. There is the possibility of an early fatal outcome, and such a situation demands immediate action on the part of the physician. All such patients should be given some opiate by hypodermic and promptly removed to a hospital, if they are not already in a condition of shock too great to permit their transportation. External heat, repeated doses of morphine or other opiates, and elevation of the foot of the bed should be provided immediately to combat shock. Drugs such as adrenalin, ephedrine, caffeine and the like should be avoided, as they increase the pulse rate and blood pressure and so enhance bleeding.

After the shock of the great blood loss has been compensated, the next step is to determine, if possible, the cause of the hemorrhage and its extent. A careful physical examination should be performed and a thorough history taken, with especial reference to symptoms and other evidence of peptic ulcer in the past. Diligent laboratory studies should be made in order to discover whether some general disease such as thrombocytopenic purpura, hemophilia, leukemia, pernicious anemia or scurvy is present. Further study should be made to rule out cirrhosis of the liver. Often the first symptom of cirrhosis is massive hematemesis or melena, coming on before the classic picture of ascites and jaundice. Platelet counts will determine if thrombocytopenic purpura is present or not, and other blood studies will indicate the presence or absence of other blood dyscrasias. About 90 per cent of all gross hemorrhages from the stomach result from an eroded vessel in the base or margin of a peptic ulcer. This paper is therefore

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primarily concerned with gross hemorrhage from peptic ulcer.

Such hemorrhages may be sudden and massive, resulting in syncope, shock, and prostration, or they may be slow, with no hematemesis, and manifest themselves in weakness, pallor, dyspnea, and lassitude—the results of a severe chronic anemia. All these cases show tarry black stools, with highly positive benzidine tests, which indicate bleeding from the upper gastro-intestinal tract.

In 1932 Meulengracht⁽¹⁾ of Copenhagen observed that ambulatory patients with known ulcers having severe melena and often hematemesis made rapid recoveries without greatly varying their diets. He reasoned also that the noisiest stomach was the empty one and the quietest was the one partially filled. He therefore adopted the practice of giving a liberal and varied diet immediately to patients with massive gastric hemorrhage, and reduced his mortality rate from about 9 per cent to 1.3 per cent in his series of 251 hospitalized cases. It was observed, however, that many of his patients were not bleeding massively, and furthermore that, because of free hospitalization, most of his patients were admitted promptly when bleeding began. The diet in Meulengracht's hands consists of about 2300 calories per day of soft, pureed foods and bread, sliced cold meats, cereals, tea, milk, and cream. In the opinion of most gastroenterologists in this country, such liberality with food immediately following a hemorrhage is rather heroic, and the patients of the present small series have not been fed as soon or as freely as those of Meulengracht's series. The modification used was begun independently of previous work in this field because the mechanism of pain in ulcer also is a great factor in prolonging bleeding. A. J. Beams of Cleveland showed that all pain associated with peptic ulcer is due to the mechanical effect of muscular spasm which is aggravated by hypermotility of the stomach, and it is well known that these conditions are more prominent in an empty stomach. Pepsin and hydrochloric acid have been proven in the test tube to digest fibrin and freshly clotted blood. Both of these are bound by food, alkalis, or some of the amphoteric colloidal gels such as

aluminum hydroxide⁽²⁾, so that the freshly forming clots in the bleeding vessels are protected and allowed to organize.

Our procedure has been to keep the patient drowsy with opiates or sodium phenobarbital, giving only small amounts of cracked ice by mouth for eight to twelve hours, and then to begin the feeding of one ounce each of whole milk and cream each hour. On the second day three ounces of a thin plain gelatin solution is given thrice daily along with the milk and cream. On the third day soft cooked eggs, cereal and toast are added in small quantity, and so the diet is increased gradually. As a general rule the patient's extreme anxiety is promptly allayed and he often sleeps without sedatives. In almost all instances bleeding has stopped promptly and the signs and symptoms of shock have disappeared quite rapidly.

One of the gravest errors generally made is to give blood transfusions of some quantity and number too soon. Transfusions given in the presence of active bleeding from the stomach result in about 20 per cent mortality, and are indicated only if the hemoglobin falls to 30 per cent (or 5 Gm.), or the systolic blood pressure is 90 mm. of mercury or below and still falling⁽³⁾. The low blood pressure is nature's protecting mechanism against further bleeding. The administration of blood increases the blood volume and pressure and so enhances bleeding. When necessary, transfusions should be about 250 cc. of citrated blood and should be given very slowly by the drip method. Solicitous relatives almost always demand that transfusion be performed, but blood should be withheld while active bleeding persists, unless the above indications are present.

Routine early surgical intervention results in a mortality of about 15 per cent, although Lahey, operating only on those patients above 40 years of age, reported deaths in only 5 per cent of his cases. Widespread opinion, however, holds that operation on ulcer patients is indicated only when bleeding is recurrent or when there is perforation, deep penetration, obstruction, even faint evidence of malignancy, or when the ulcer is gastric and, after three weeks of good medi-

1. Meulengracht: Treatment of Hematemesis and Melena with Food, *Lancet*, 229:1220, 1935.

2. Browne, D. C., and McLardy, G.: Management of Bleeding Peptic Ulcer, *Am. J. Digest. Dis.*, 6:87-92 (April) 1939.

3. Crohn, B. B., and Lerner, H. H.: Gross Hemorrhage as a Complication of Peptic Ulcer, *Am. J. Digest. Dis.*, 6:15-22 (March) 1939.

Name	Age	Sex	Degree of Bleeding	Lesion	Treatment	Result
M.T.	17	F	Gross hematemesis	Duodenal and gastric	Fed 12 hrs. Trans. 1 wk.	Recovered
C.A.	40	M	Gross hematemesis	Duodenal	Fed 12 hrs. Trans. 1 wk.	Recovered
T.W.	54	M	Gross hematemesis	Gastric	Fed 12 hrs. Trans. 10 D. Surg. 1 mo.	Recovered
L.F.O.	69	M	Moderate melena	Gastric malignant ulcer	Fed 18 hrs. Surg. 1 mo.	Recovered
R.P.	31	M	Gross hematemesis	Duodenal	Fed 18 hrs.	Recovered
J.F.	42	F	Gross hematemesis	Duodenal	Fed 10 hrs.	Recovered
Anton	24	M	Gross hematemesis	Duodenal	Fed 6 hrs. Trans. 1 wk. Surg. 2 wks.	Recovered
Slate	48	M	Gross hematemesis	Gastric	A—Starved B—Starved C—Fed 12 hrs.	A—Hospital 1 mo. B—Hospital 6 wks. C—Hospital 2 wks.
D.F.	50	M	Melena	Gastric carcinoma, obstruction	Fed 6 hrs.	Bleeding stopped Surg. 1 mo. Died
F.R.	72	F	Hematemesis	Gastric obstruction	Fed 12 hrs.	Bleeding stopped Surg. 1 wk. Died
V.S.	36	M	Hematemesis	Duodenal	Fed 18 hrs. Ambulatory	Recovered
D.K.	68	M	Repeated extreme hematemesis Hemoglobin 15%	Not known	Trans.	Died
R.S.	16	M	Hematemesis	Duodenal	Fed 12 hrs.	Recovered
A.C.	52	M	Hematemesis	Gastric ulcer	Fed 12 hrs.	Recovered
C.A.E.	56	M	Melena	Duodenal Diabetes	Fed 6 hrs.	Recovered
TOTAL			Massive 12	Moderate 3	Recovered 12	Died 3

cal treatment, is still 2 cm. or greater in diameter.

Twelve cases with massive and three with moderate hemorrhage from the stomach are presented. Twelve patients survived and three died. Those which survived were fed early after bleeding on a modified Meulengracht regime. Of the three who died, one was given repeated small transfusions, and no food, another died of pulmonary embolism about twelve hours after gastric resection was performed, and the third died of postoperative peritonitis following resection of the stomach for a highly malignant carcinoma. Both of these last two cases gave a satisfactory response to feeding; so they are not included in the mortality figures of this series. Of all the patients fed early none died except as a result of surgery performed later on.

Conclusions

1. Early feeding of a conservative liquid and soft diet tends to arrest bleeding, combat shock, allay anxiety, and shorten the hospital stay.

2. Blood transfusions given early raise mortality figures tremendously.

3. Early surgical intervention results in a high mortality rate when it embraces patients of all ages.

Discussion

Dr. Wingate M. Johnson: Since I am in complete and hearty accord with the principles set forth in Dr. McMillan's paper, there is really little for me to discuss. I believe I can claim to have been the pioneer here in the early feeding of patients with bleeding from the stomach. I should like to emphasize one or two points in this paper that impressed me.

The first is the importance of keeping the patient rather drowsy for the first day or two. For this

I prefer bromide or sodium phenobarbital by bowel, or the latter by intramuscular or intravenous injection, unless the patient is known to tolerate opium derivatives well. The vomiting that may follow opiates may renew the hemorrhage.

Another point worthy of emphasis is the danger of using transfusions too early and in too large amounts. I fully believe that more lives have been lost than have been saved by transfusions after gastric hemorrhages.

The family and friends will expect and almost demand this dramatic gesture. It helps their feelings to allow their blood to be typed or matched with the patient's, with the assurance that transfusion will be done if and when necessary.

The only question I would raise is whether it is necessary to wait even eight to twelve hours after a hemorrhage before giving food. I am not quite ready to accept the advice recently attributed to one of Meulengracht's followers, to "wipe the blood out of the patient's mouth and give him a beef-steak", but I often begin giving my patients milk within an hour or two after active bleeding. However, Dr. McMillan's results speak for themselves, for they could not be improved. His paper is a most practical one, and I am glad to have had the privilege of hearing it.

TREATMENT OF BACILLARY DYSENTERY IN INFANTS

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KINSTON

To avoid useless repetition and to save time we shall limit our discussion strictly to the problem of treatment. The broader aspects of incidence, etiology, pathology, diagnosis, etc., have been discussed in a previous paper⁽¹⁾.

With few exceptions the "enteritis and diarrhea" in this state are infectious, and food and water borne. We have a problem of rural sanitation and hygienic education which will require years to conquer. In the meantime the problem of treatment and prophylaxis is ours. Many of the babies we treat in rural North Carolina live in surroundings which seem to preclude any possibility of successful treatment. Yet this year the prospects of success are brighter than at any time in the memory or experience of any of us. Of this we are so certain that it seems worth our time to review the subject of treatment.

Death from dysentery in infants may come in either of two ways. The overwhelming

toxemia, pyrexia, dehydration and acidosis at the onset may cause death in a few hours, especially if convulsions are unrelieved. But if the infant is carried through this phase successfully he may waste away and finally die weeks later from the effects of persistent diarrhea.

Heroic measures may be needed for the first phase, such as the administration of chloroform and barbiturates to control convulsions; administration of sodium lactate to relieve acidosis; blood or serum transfusions to relieve shock; and perhaps the continuous intravenous drip to maintain a failing circulation. But such cases are invariably those which have been neglected or mismanaged at the onset. Someone failed to recognize a serious situation in time. Possibly because diarrhea is not always present at the onset, the physician who first sees the child does not recognize the meaning of the pyrexia, vomiting and neurological symptoms. This point cannot be overemphasized.

What can the man who sees the baby first do to prevent such catastrophes? The answer is old and unimpressive, but it is still as true as it has always been. Give water. Empty the baby's stomach and bowels and give water. Don't empty the bowel with cathartics because they cause more water to be lost. Give water, withhold milk and food, and the bowel will empty itself. The baby will vomit water, but after the vomitus becomes clear and free of food or milk, give water in dribbles at frequent intervals. A tablespoonful every ten or fifteen minutes will usually be retained. This adds up quickly to two or three ounces an hour, which is a considerable fluid intake and enough usually to cause diuresis, which is the quickest way to relieve toxemia. Unless there is diuresis the treatment is inadequate. Diuresis is the surest sign that the baby's blood volume and circulation are being maintained. If enough water is given to cause diuresis, the refrigerant effect of the water on the pyrexia will soon be evident. However, some antipyretic, such as aspirin, should be given as soon as it can be retained and physical means of cooling body temperature, such as cold applications to the head, and temperature sponges, should not be neglected. If there are jerky movements suggestive of an impending convulsion barbiturates should be given by mouth or rectum.

Undoubtedly if these simple procedures were followed at the beginning no baby

Read before the Section on Pediatrics, Medical Society of the State of North Carolina, Pinehurst, May 21, 1941.
The technical work of culturing the stools was done by Miss Mildred Ringle, Memorial General Hospital.

1. Keiter, W. E., in *Virginia M. Monthly*, March, 1940 (Paper submitted for publication in November, 1939).

would ever need the drastic measures we have mentioned. It is distressing to see how often the mother withholds water because the baby vomited water. It is more distressing to see parents pouring various medications down these desperately sick babies.

The problem of supplying an adequate fluid intake has been greatly simplified. As pointed out by Darrow and Yannet², "thirst is not an obligatory accompaniment of dehydration," and water alone will not restore the body fluids. Certain salts are needed before the body can hold its normal quota of water. These salts, which by osmotic action allow the body to retain water, are being lost in the vomitus and diarrheal stools. When they are depleted they must be restored. It is even more desirable to provide them from the start so as to preclude a possible deficit.

This can be done simply by giving sweetened diluted Ringer's solution orally³. We use a hypotonic solution (NaCl 0.7 Gm., KCl 0.3 Gm., CaCl₂ 0.25 Gm. per liter). This solution is made up by the druggist in 25 times this concentration. The mother is instructed to put 2½ tablespoonfuls to a quart of boiled water and to add one tablespoonful of sugar. Three very significant facts stand out: *first, it stimulates thirst* so that babies drink enormous quantities of it; *second, it is exceptionally well tolerated*; *third, it produces an enormous continuous diuresis*. It is not unusual for babies to take three and four quarts a day of this solution. This represents a sodium chloride intake of two or more grams.

Breast fed babies which have never nursed a bottle are especially difficult to manage. Usually they will drink Ringer's solution flavored with coca cola, from a coca cola bottle without a nipple. We have never seen any harmful effect from the coca cola, and babies invariably like it. Severely dehydrated babies may not start drinking it until they have had one or two injections of subcutaneous saline. Subcutaneous saline stimulates thirst and allays nausea.

If the baby's fluid balance is maintained, and his pyrexia and convulsions are controlled, we can expect him to pass the first dangerous phase. Then we attack the problem of the diarrhea. There are certain cardinal points in this treatment which we wish

to emphasize. We think that all of them are essential, and when the treatment fails we believe it is because some of them were omitted.

The first essential is starvation. We use the word advisedly, giving proper attention to vitamins. Vitamins A and D are supplied in the form of oleum percomorphum 50 per cent concentrate, drops ten to thirty daily, depending on the apparent need for it. Vitamin B complex is supplied as White's Vitamin B Complex Concentrate, drops ten to thirty daily. If there is evidence of severe vitamin B deficiency, such as stomatitis, peripheral neuritis, or extreme anorexia and nausea which persist we give Lederle's Vitamin B Complex Concentrate parenterally. Vitamin C is supplied in the form of ascorbic acid, 50 to 75 mg. daily. In cases of severe deficiency this is given parenterally (Eli Lilly—Cevalin). Good oranges are often difficult to buy and occasionally orange juice seems to increase tenesmus. That is why we have adopted ascorbic acid as our routine source of vitamin C. It is utterly impractical to expect these infants to digest and assimilate protein and fat during the acute phase of their illness. Milk in any form simply increases the diarrhea and fluid loss by stimulating an outpouring of intestinal secretions. At the same time it increases fermentation, abdominal distention and toxemia. Milk makes the baby worse.

We were convinced of this in 1936 at the time we first began to use sweetened diluted Ringer's solution orally. When the baby drank an abundance of this, instead of milk, his abdominal distention was less, the volume of the stools was much less, the baby was less toxic, and his general condition improved. He actually gained weight.

The weight gain or loss during the first week or two of a severe diarrhea is much more dependent on salt and water balance than on protein or fat deficit. That is why protein and fat starvation during this time are not important. Babies can be kept on Ringer's solution orally for several weeks if necessary without visible wasting. It is true that after a time they may develop some nutritional edema, but this is easily controlled by transfusion. Starvation for periods of twenty-four or forty-eight hours hardly gives time for the bowel to become empty. We see little virtue in such short intervals of starvation.

2. Darrow, D. C., and Yannet, H., in J. Clin. Investigation, 15:419, 1936.

3. Keiter, W. E., in Virginia M. Monthly, May, 1937.

At one time this starvation period might have been dreaded because it had to be extended over a period of two or three weeks or more. We treated babies in this fashion with better than average success before the advent of sulfanilamide. Not infrequently a transfusion would exert an apparently specific effect on the disease. The temperature would drop by crisis and the diarrhea quickly subside. But such a result could never be anticipated with any certainty. With sulfanilamide the whole picture changed.

In 1937 it was natural to try sulfanilamide on cases which, according to previous experience, were destined to be fatal. There was no other treatment of any consequence available except fluids, blood and vitamins. To our amazement these babies did not die when given adequate doses of sulfanilamide. Toxemia, fever, intestinal distention and frequency of stools all responded promptly. During the summer of 1937 we gave it only to those patients who appeared fatally sick and under the closest hospital observation. The results were so uniformly good that in 1938 we gave it to outpatients. In 1939 we were so impressed with the results that we reported our clinical experience⁽¹⁾. About the same time similar success was reported by Jones and Abse of London, England⁽⁴⁾.

In 1940 there appeared reports of laboratory work on the *in vitro* effect of sulfanilamide and the new related drugs sulfapyridine and sulfathiazole on organisms of the dysentery group^(5, 6). Similar work was done on mouse infections in 1941⁽⁷⁾. These reports showed sulfathiazole to be more effective than sulfanilamide or sulfapyridine. About the same time a new drug, sulfanilylguanidine, was found quite effective and is soon to be released commercially⁽⁸⁾. Clinical reports of outstanding success with sulfathiazole and sulfapyridine are appearing more frequently^(9, 10).

As these reports multiply they force one to conclude that there is a scientific basis for our success in applying the sulfonamide compounds to the dysentery problem. We think the reason we had success in using

sulfanilamide, while others failed, was that our routine included starvation except for an enormous intake of sweetened diluted Ringer's solution. Others fed their babies various formulas, or used only very brief periods of starvation. By a coincidence of circumstances we had an ideal situation for the trial of sulfanilamide. The baby's bowel was empty. There was nothing but the natural intestinal mucus to dilute the drug, whereas in those babies taking formula there usually is a great quantity of fluid media and intestinal secretions to dilute it. Not only are the newer drugs more specific for the dysentery group of organisms, as *in vitro* and mouse protection tests show, but they are much less readily absorbed than sulfanilamide. They occur in much higher concentration in the intestinal tract. This point is particularly true of sulfanilylguanidine.

However, the slight absorption of sulfanilylguanidine is not an unmixed blessing. We have always contended that dysentery is not simply an infection of the lumen of the bowel. The involvement of the intestinal mucosa and submucosa, and of the mesenteric lymphatic system, and an occasional demonstrable invasion of the blood stream make it desirable, in our opinion to have a therapeutic blood level of sulfanilamide⁽¹¹⁾. The following case is cited as an example:

S. S., a white female aged 23 months, was admitted June 17, 1941, with very severe Flexner dysentery (proved by stool culture). She was having from twenty to thirty stools a day with blood and mucus; she was vomiting and her temperature ranged from normal to 104 F. She was given subcutaneous saline and started on Ringer's solution by mouth. Our usual routine was followed, except that sulfaguanidine, Gm. 0.5, was given every four hours instead of sulfanilamide. There was no improvement in the frequency of the stools, the temperature, or the general appearance and toxemia. After three days she was put on sulfanilamide, and the sulfaguanidine was discontinued. Within forty-eight hours her temperature had subsided, and her stools were reduced to six within twenty-four hours. She was allowed to go home and be treated as an outpatient. Her recovery was complete in another week.

The following case we consider a typical example of the response to be expected in a severe case of dysentery treated according to our method, using sulfanilamide:

4. Jones, E., and Abse, D. W., in J.A.M.A. 114:698 (February 24) 1940.
5. Libby, R. L., and Joyner, A. L., in J. Infect. Dis. 67:67, 1940.
6. Lawrence, C. A., in Proc. Soc. Exper. Biol. and Med. 44:162, 1940.
7. Cooper, M. L., and Keller, H. M., in J. Pediat. 18:458, 1941.
8. Marshall, E. K., Jr., et al., in Bull. Johns Hopkins Hosp. 68:94, 1941.
9. Taylor, Grant, in J. Pediat. 18:469, 1941.
10. Ravenel, S. and Smith, L., in South. M. J. 34:504, 1941.

B. D., a white male, aged 22 months, was treated as an outpatient. When he was first seen, on July 3, 1941, there was a history of severe diarrhea of three days' duration, with twenty-six to twenty-eight stools a day with blood and mucus. He was severely dehydrated. Twelve hundred cubic centimeters of normal saline solution was given subcutaneously on the first visit. His weight before the saline was given was 25 pounds; afterwards it was 27½ pounds. Culture showed Flexner type of dysentery organisms in the stool.

His course is summarized as follows:

Date	Stools	Treatment	Course Weight
July 3	28	1200 cc. saline subcutaneously <i>Ringer's solution</i> <i>by mouth</i>	25 and 27½ lbs.
July 4	17	1500 cc. intake	26¾ lbs.
July 5	14	2000 cc. intake	26½ lbs.
July 6	15	2500 cc. intake	26½ lbs.
July 7	10	4500 cc. intake	26½ lbs.
July 8	7	3500 cc. intake	Milk offered.
July 9	6	2500 cc. intake	Taking milk and bananas. Semi-formed stools.
July 10	2		Beef, eggs and bread started.

The response in many instances is much more prompt. However, we feel that such cases are not really severe, although there may be quite numerous stools. The frequency of the stools is not necessarily the most reliable sign of the severity of the infection⁽¹⁾. For example:

W. M., aged 3 years, came in as an outpatient on July 17, 1941. Severe diarrhea with blood and mucus had started on July 14. Stools were so frequent and merged into each other to such an extent that accurate count was not possible.

During the first twenty-four hours after treatment was started he had twenty-five to thirty stools and drank 1000 cc. of Ringer's solution. In the next twenty-four hours the stools dropped to three, and next day milk was given. He had recovered completely.

We think that this was a mild case, although Flexner organisms were recovered in the stool. We feel also that the age of the child was an important factor. Older children as a rule respond more quickly.

We do not regard sulfanilamide as a panacea; it is only part of the treatment, and we do not promise results in less than four or five days to a week. Rarely it will require

two weeks. Nevertheless such results are excellent in comparison to the pre-sulfonamide era of medicine. The mortality has reached the vanishing point.

We have no argument with those who contend that sulfanilamide is of no benefit as usually applied in the treatment of bacillary dysentery. However, we believe that if they will follow our routine they will be successful.

Starvation is the point that discourages most physicians from trying it. But, as I stated, I use this term advisedly. These infants are not starving in the usual sense. They are taking tremendous amounts of water, valuable minerals, carbohydrate in the form of sucrose (or dextrose if you prefer), and vitamins. Protein and fat starvation are serious when prolonged, but our babies rarely need to fast longer than five days since the use of sulfanilamide. This interval is too short for a serious depletion of protein and fat. If the infant already has a protein deficit he needs a transfusion, the only practical means of prompt restoration. The baby's behavior and general appearance all show that he feels better on this regime. Mothers do not object to it because they can see the daily improvement in the child.

When the stools subside the formula is started. The only formula used is lactic acid evaporated milk (equal parts of 1 per cent lactic acid and evaporated milk). This is usually started in feedings of two or three ounces every four hours. It is increased by adding one ounce to each feeding daily until the baby is getting all he wants. The Ringer's solution is continued between feedings *ad lib.* and the sulfanilamide is not discontinued until the stools are perfectly normal in appearance.

The time to start feedings requires judgment and experience. Older infants may cease having stools entirely and go twenty-four or forty-eight hours without any. As a rule the young infants, under 6 months, will have four to six stools normally, even when well. On the starvation regime these will be very small brown stains. When they assume this character one may be sure feedings will be tolerated. At any rate we seldom have to continue starvation beyond five days, although we start feedings cautiously and continue the drug therapy well into convalescence.

We have purposely omitted a discussion of

the toxic properties of sulfanilamide, assuming that those who use it in this treatment are fully aware of them. The subject has been discussed quite fully in all the current literature.

Summary

To summarize our concept of therapy we repeat that now we have a specific therapeutic agent, if used in conjunction with adequate fluid administration, starvation, and vitamin restoration. Measures which cause intestinal stasis are counter to nature's efforts for proper drainage of the bowel. Therefore we give no opiates. We feed none of the special foods used in diarrhea because they do not really nourish the patient and simply are so much foreign matter for ejection in the stools. At the same time they promote the excessive secretion of digestive juices, giving greater volume to the stools and increasing their dehydrating tendency. Blood transfusion is used as indicated for shock, anemia, or serum protein deficiency.

Abstract of Discussion

Chairman Roberts: Dr. Keiter, we have certainly enjoyed your paper. Is there any discussion or questions?

Dr. A. S. Root, Raleigh: I am glad that Dr. Keiter selected this subject. When we think that there are between five hundred and eight hundred babies under two years of age who die of diarrheal disease in North Carolina each year, we realize that it is a subject that should be discussed, particularly in view of chemotherapeutic agents being used now.

Dr. Bugg and I tried sulfanilamide about four years ago on these cases of bacillary dysentery. We got no results so far as we could tell. We used sulfapyridine the following year, but it was unsuccessful because the children were usually already nauseated and its tendency was to make them more so. The last part of last summer, when sulfathiazole was available, we treated about a half dozen cases with it with dramatic results. Since that time, the papers of several doctors have been published on the use of sulfathiazole in dysentery in children, and their experience has been the same as ours.

We have already had this year a few cases which we have treated with sulfathiazole with the same dramatic results. It is remarkable how these children who suddenly become ill, with frequent bloody stools, respond after forty-eight hours of sulfathiazole treatment. The temperature comes down and the number of stools returns to three or four a day. I think this drug is going to reduce the mortality and the long illnesses in these cases.

Sulfanilamide enters the red blood cells and may cause a hemolytic anemia; sulfapyridine is nauseating and toxic, and there is a tendency toward crystal formation in the tubules of the kidneys. With sulfathiazole there is a definite tendency toward the formation of crystals in the glomeruli of the kidneys, so in giving it, the all-important thing is to see that the child gets plenty of fluid. The drug should not be given otherwise.

The other consideration in the treatment with sulfathiazole is that it should not be kept up for a long period of time. Usually forty-eight hours is long enough, for after this time these children will take and retain appropriate milk mixtures, and clinically they are convalescent.

A good way to give sulfathiazole is to powder it and put it in a couple of teaspoonfuls of mashed banana, applesauce or prunes, and follow it with as much orange juice or other fluid as you can get in the child. A grain per pound of body weight in twenty-four hours is an appropriate dose for infants and young children.

We feel that in forty-eight hours of treatment, if you can get a pint of fluid a day in the child, you will be safe, insofar as sulfathiazole crystallization is concerned. We find that treatment with sulfathiazole will produce dramatic results and shorten the sickness of these patients. Until we get the new drug, sulfaguanidine, which will be on the market soon, I believe we can do wonders with the sulfathiazole treatment of bacillary dysentery.

Dr. Charles F. Williams, Raleigh: An 8 month old child, weighing fifteen pounds, who came into Rex Hospital, had been treated by a doctor in the county for otitis media. He was getting $3\frac{3}{4}$ grains of sulfathiazole every three or four hours, and had been for a period of a week. He was sent to the hospital with a diagnosis of meningitis. He did not have it. His urine was blood red, and when it dried, it formed crystals. I thought the child was going to die. We gave him sodium lactate solution subcutaneously until diuresis was established. It saved the child. On the second or third day the sulfathiazole content began to drop and the blood nonprotein nitrogen was down. The remainder of the child's stay was uneventful.

I want to emphasize the fact that Dr. Root emphasized: In giving sulfathiazole sufficient fluids are very important. It is very difficult to get fluids into a child with pneumonia or other infections. A way that will work pretty well is to tell the parents that if they do not get so many ounces of fluid in the child, it will be necessary to stop the pills.

Dr. C. P. Jones, Jr., Snow Hill: I am a country practitioner. I have had about 70 cases of dysentery in the last eighteen months. Our greatest problem is treating these cases in the home. I think one of the most important points to be stressed is the maintenance of the fluid balance. Most of our patients are indigent. Treatment in the hospital is out of the question. I try to get between 1000 and 2000 cc. of Ringer's solution into the baby by mouth. A good many children do not like it. I find that a little Pepsi-Cola or Coca-Cola makes them take it more readily, and the little caffeine the latter contains acts as a stimulant.

I have been using sulfanilamide and am still convinced that it is a very good drug. I use the method of starvation for forty-eight to seventy-two hours. Out of more than seventy cases, we have not lost a case yet. One of our problems is that the parents want to give children food too soon.

I had one case which I referred to Dr. Keiter. For approximately thirteen weeks we kept the baby on fluids by mouth. Toward the end of three weeks I did one transfusion because of anemic edema.

I want to stress the point that you can maintain the baby very adequately on fluids. It is remarkable how long they can go without food other than vitamins and fluids. I think the period of starvation and maintenance of fluid balance by lactate solutions or Ringer's solution by mouth are very important, irrespective of the chemotherapy used.

Dr. Jean McAllister, Greensboro: I gave sulfathiazole last summer in Greensboro. We did find that

it was most effective in these cases. I did not use sulfanilamide. Sulfathiazole can be taken much more comfortably and parents are much happier to see a baby that is not blue. The initial period of starvation can be limited; within twenty-four hours these babies can be taking cold milk, and they are really well in five days. Time will tell us a little more about sulfathiazole when it can be followed pathologically. All of us are waiting for one of the very few toxic cases, wondering what will happen if we can give sulfathiazole quickly enough intravenously to have it excreted through the intestinal tract. Perhaps it will keep some from dying that otherwise would. I have not heard a report of one of those very toxic cases yet.

Dr. Keiter: I am a little disappointed at the discussion, because there was not very much controversy.

I appreciate Dr. Jones's stressing the importance of a tremendous fluid intake. When a baby drinks from two to four quarts of Ringer's solution, he wets all the time. I think that is terribly important. I do not agree with Dr. Root that a pint a day is enough.

I do not think you folks in Greensboro and Durham have many cases of dysentery which will compare with those we see where I live. At autopsy I have seen the tremendous changes which have taken place in the intestines and the mesenteric lymphatic system, and I can't see how healing could take place in twenty-four to forty-eight hours.

I do not see any particular advantage in starving a baby twenty-four to forty-eight hours. Where these babies get nothing but fluids for a longer period of time, they may get a higher concentration of sulfanilamide in the bowel, which may explain our good results with sulfanilamide. The sulfathiazole and sulfaguanidine are not as easily absorbed. With sulfanilamide you probably get 95 per cent absorption, while with sulfaguanidine about 15 per cent is absorbed, leaving a much higher concentration in the bowel.

Dr. A. S. Root, Raleigh: I think I must not have made myself clear about the adequate administration of fluid. For thirty years I have been preaching adequate fluid intake in order to maintain the fluid balance of the body in these cases. My statement was that during the first twenty-four hours, if you can get as much as a pint of fluid in the child, you will avoid danger from crystal formation in the urinary tract. That is not true of the prolonged use of sulfathiazole. I should like to suggest to Dr. Keiter that he use sulfathiazole and see if he does not get better results than he has with sulfanilamide.

Dr. Keiter: I used sulfathiazole for one month last summer on all my patients. I do not think there is any fine correlation between *in vitro* and clinical results in this disease. Under my routine I did not see any difference in the result. If you feed the baby or use another routine, you might get a different result.

The Scientific Attitude.—The basic thing about science is an attitude or habit of mind, a way of thinking which is characteristic of those entitled to be called scientists The essential condition is freedom from bias and prejudice. The major objective of the scientist is truth, no matter how unpleasant it may be or how much discomfort it may cause among those who hold cherished beliefs which happen, nevertheless, to be errors.—Eliot Blackwelder: *Science and Human Prospects*, Science, 93:359 (April 18) 1941.

TUBERCULOSIS AND NATIONAL DEFENSE

C. D. THOMAS, M. D.

SANATORIUM

The declaration of a national emergency and the induction of large groups of selectees and volunteers into our Army and Navy have presented a new problem in the diagnosis of tuberculosis. As these men are coming from all walks of life, many of them will have been infected with tuberculosis. It is most important that those who have definite disease, either healed or active, be excluded from service by the examination of the local draft board or of the Army induction center.

It is most important that the medical profession profit by the mistakes that were made in the induction of the draftees during the first World War in 1917 and 1918. The induction of a large number of men who had tuberculosis into the army was pardonable at that time. Many changes have taken place in the past twenty-five years in our conception of clinical tuberculosis, or of what is liable to become clinical tuberculosis, and our methods of diagnosis have been greatly improved.

In 1917 it was the consensus of opinion⁽¹⁾ that practically every one was infected with tuberculosis and had obtained this infection in early childhood. It was thought that there was very little danger of a person's acquiring the disease as a result of contact with an open case of tuberculosis after he had reached adult life. The tuberculin test was held to be of no value except in very early childhood; since every adult had been infected, the test, of course, would be positive. Active pulmonary tuberculosis was diagnosed by showers of rales heard after cough, particularly over the apices, and by afternoon temperature elevation or hemoptysis. The x-ray was not widely used as a diagnostic agent and there was considerable difference of opinion as to its efficiency and interpretation. The treatment of tuberculosis was based on rest, fresh air, and good food, and particular emphasis was placed on the climate. Collapse therapy was used very little, if at all.

¹Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Pinchurst, May 20, 1911.

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It is generally believed today that primary infection with the tubercle bacillus may occur at any age, but that, except under very intimate exposure, it does not often develop into clinical disease after 30 years of age. The danger to those in their teens and early twenties is the greatest, and a flare-up of an old infection may occur at any age.

The tuberculin test is a valuable adjunct to the diagnosis of tuberculosis. Positive reactions are found in 4 or 5 per cent of children in the primary grades⁽²⁾, and in 25 to 50 per cent of young adults⁽³⁾. Therefore, a negative tuberculin reaction will automatically, in many areas, eliminate at least 50 per cent of those tested from the possibility of tuberculosis.

Tuberculosis develops from very small areas of involvement in the lung by direct extension or bronchogenic and hemorrhagic dissemination to adjacent or far distant portions of the lungs. In the majority of cases the disease is quite extensive before physical signs and symptoms are produced. Physical examination is valuable in determining whether or not physical signs are present, but it cannot exclude the possibility of tuberculosis; for many patients with extensive disease will present very few, if any, abnormal physical signs, and very early lesions rarely present any signs at all.

X-ray examination of the chest reveals all abnormal changes, whether large or small⁽⁴⁾. The fluoroscope has also been shown to be a valuable means of revealing abnormal changes in the lungs⁽⁵⁾, but these abnormal findings should be corroborated by x-ray films. Its greatest value is in mass surveys where the cost of x-ray films for the entire group would be prohibitive.

The final diagnosis of tuberculosis, of course, still remains with the laboratory, in the demonstration of tubercle bacilli, either in the sputum or other body fluids, by direct

examination, culture or animal inoculation.

The basic treatment of tuberculosis still consists in rest with good food and fresh air, but several forms of collapse therapy have been added. These are pneumothorax, phrenic operation, thoracoplasty, pneumonolysis and pneumoperitoneum, all of which have brought hope of recovery to many who would formerly have been considered hopeless. Sanatoria for isolation are now more like general hospitals than like the custodial homes which they were formerly.

In view of our present knowledge and belief, it is no wonder that large numbers of men were inducted into the service in 1917 who had active tuberculosis which was not evidenced by definite rales in the chest or definite symptoms. A survey of the cost of taking men with manifest tuberculosis into the armed forces was recently made by Spillman⁽⁶⁾. He states that to date the United States Government has spent \$959,000,000 for vocational training, insurance, compensation and hospital care of those who developed what is known as service connected tuberculosis. This does not include the amount spent for the construction of hospitals for their care. The end has not as yet been reached, for approximately \$3,000,000 is spent each month in this cause. It was also estimated that each man with tuberculosis inducted into the army has cost the Government approximately \$10,000. Undoubtedly many men with active tuberculosis were inducted into the army, and became ill and unfit for duty. Others with very small lesions, under the strenuous life of the army, developed active tuberculosis and became unfit for duty. Both of these groups in turn undoubtedly infected many others with whom they were thrown in close contact. It would seem, therefore, that we should x-ray the chest of every selectee and volunteer in our new army. The tuberculin test would probably not be advisable or necessary; for each man who is inducted should have an x-ray film as a permanent record, regardless of whether or not he has a positive tuberculin reaction.

A recent survey of a National Guard unit⁽⁷⁾ by the New Hampshire Tuberculosis Association reveals that it cost \$1.80 per man for

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3. a. Diehl, H. S. and Myers, J. A.: Tuberculosis in College Students, *Trans. Nat. Tub. Asso.*, 1936.
b. Edwards, H. R.: Tuberculosis Case Finding: Studies in Mass Surveys, *Am. Rev. Tub.* 41:1 (June) 1940.

4. Pesquera, G. S. and Sampson, H. L.: The Evolution of Chest Roentgenographic Technic with Special Reference to the Modern Concept, *Trans. Nat. Tub. Assoc.*, 1937.

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6. Spillman, Ramsay: The Value of Radiography in Detecting Tuberculosis in Recruits, *J.A.M.A.* (October 19) 1940.

7. Burroughs, Travis P. and Trechette, Alfred L.: Cooperation of Health Agencies with Army Authorities, *J.A.M.A.* (October 26) 1940.

that organization to make x-ray films of their chests. Among the 1552 men examined 7 cases of tuberculosis were found, making the cost about \$400 per case. When compared with the figure of \$10,000 for each man inducted into the army in 1917 who developed tuberculosis, the \$400 per case is a relatively small amount. All of these men were found when they had a minimal amount of disease. Under proper treatment and observation they can be kept from having a serious breakdown and becoming a severe financial liability to the country, and can soon be returned to an active place in society.

Canada, taking advantage of our present knowledge of tuberculosis, has made x-ray films of each of her volunteers⁽⁸⁾. So far they have rejected 1.06 per cent because of tuberculosis. This is about the number which would be anticipated from their death rate, which is only very slightly higher than that in the United States. It has also been reported that from a group of 4000 men inducted into the army of the United States who had x-rays of their chests, 45, or 1.12 per cent were rejected because of tuberculosis. These figures are not of a sufficiently large group to be conclusive, but they show the advisability of giving x-ray examinations before induction. Experience in various sections of the country indicates that 4 or 5 out of every 1000 men examined will have active tuberculosis and will need treatment.

It is understood that strong recommendations have been made to the Army and Navy that every man who is inducted into the service shall have an x-ray of his chest. The criterion for rejection with a diagnosis of tuberculosis should be any reinfection or parenchymal lesion, either active or inactive, regardless of extent, or extensive primary disease, either active or calcified.

The group of men who are rejected for military service with a diagnosis of clinical tuberculosis will in themselves present a new problem for the medical profession and various health organizations. Those who have clinical disease will need treatment and doubtful cases will need to be kept under observation. They should be reexamined at intervals, so that if the lesion should become active they can immediately have treatment, and be saved from a serious breakdown. A

plan has been worked out by which the army induction center, having made a diagnosis of tuberculosis, will return the diagnosis to the local draft board from which the man was sent. This board will then report it to the State Board of Health, so that they may notify the local health department. This department in turn, through their visiting nurses, can personally interview these men and get them into the hands of their private physician for observation or treatment.

The elimination of tuberculosis from our armed forces will reduce the possibility of soldiers' acquiring tuberculosis by contact to a minimum. Those who are rejected will be saved from a serious breakdown which may be caused by rigorous physical activity. From a monetary point of view the Government will be saved large amounts of money which would be due these men for compensation if the diagnosis was made after they were sworn into the service.

RELATIVE BRADYCARDIA AS A SIGN OF SULFONAMIDE FEVER

DAVID CAYER, M. D.

DURHAM

Numerous toxic manifestations of the sulfonamide drugs have been described; the most common are nausea and vomiting⁽¹⁾, cyanosis with the formation of methemoglobin⁽²⁾, hemolytic anemia⁽³⁾, cutaneous manifestations⁽⁴⁾, liver necrosis⁽⁵⁾, agranulocytosis^(6, 7), fever⁽⁸⁾, peripheral neuropathies⁽⁹⁾, and psychoses⁽¹⁰⁾. Careful observation will detect most of these toxic manifestations, but it

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b. Adamson, J. D.: Canada Eliminates Tuberculosis from Army, *Bull. Nat. Tub. Assoc.*, November, 1940.

must be recognized that repeated examinations of urine, hemoglobin determinations, and leukocyte counts cannot be done always under the conditions of practice. Considerable importance, therefore, attaches to other easily recognizable signs of unfavorable or too prolonged action of the sulfonamide drugs.

Fever due to sulfanilamide is said by Garvin⁽⁷⁾ to occur in about 10 per cent of the cases in which the drug is used. Hageman⁽⁸⁾, in a series of 134 cases, described fever as a reaction in 15.6 per cent. Keefer states: "The recurrence of fever in a patient receiving sulfanilamide may be exceedingly difficult to interpret, since it may be due to an exacerbation of the disease, or may be a sign of sulfanilamide intoxication." However, Keefer⁽¹⁾, Hageman⁽⁸⁾, Bigler⁽²⁾, Garvin⁽⁷⁾ and others have noted certain characteristics of the febrile reaction which facilitate its diagnosis: (1) The onset is usually abrupt and unexplained; (2) the fever is high and intermittent; (3) it usually occurs after one or more days of normal temperature when the original disease has reached an afebrile state; (4) the patient may not appear ill; (5) it is not accompanied by symptoms of the original infection, but by some other toxic manifestation; (6) it occurs from the fourth to the fifteenth day of therapy, most commonly about the seventh day; (7) the temperature returns to normal after the drug is discontinued. To these evidences of drug fever, we wish to add two others—namely, *chills* and *relative bradycardia*.

In Wood's report of anemia occurring during sulfanilamide therapy⁽³⁾, he states: "All twenty-one patients had fever, in most cases over 39° (102½°F), during the period of sulfanilamide therapy; no case of acute anemia occurred among a larger group of afebrile patients given sulfanilamide." This, too, is regarded as significant by Garvin⁽⁷⁾, who adds: "Fever due to sulfanilamide is an indication to discontinue the use of the drug, since it is often the first sign of more serious

CASE I. SPIKING TEMPERATURE AND CHILLS & SULFATHIAZOLE

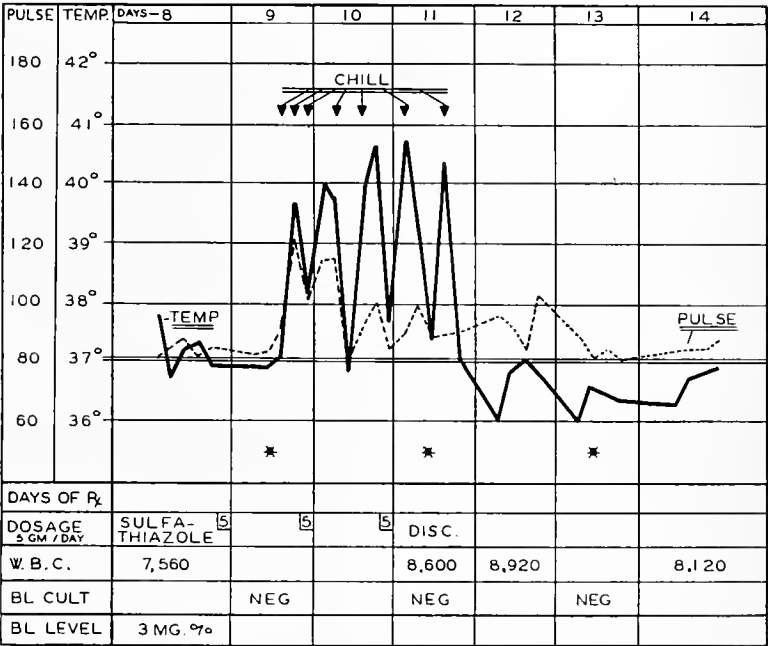


Fig. 1.

complications." The incidence of drug fever complicating sulfathiazole therapy is approximately the same as that for sulfanilamide. Long⁽¹¹⁾ gives an incidence of 4 per cent of drug fever occurring during the use of sulfapyridine.

Despite the importance of the differentiation of "sulfonamide fever" from febrile reactions due to other causes, this is not always easily done. In the study of a group of patients receiving sulfonamide drugs, we have been struck by the frequent occurrence of a relative bradycardia accompanying the fever, producing a chart not unlike that seen in typhoid fever. With the discontinuance of the drug, the fever falls promptly, the pulse at the same time assuming its normal position in relation to the fever. We have observed this typhoid-like ratio between fever and pulse rate in 18 instances. The drug used was sulfanilamide in 7 patients, sulfapyridine in 2, sulfathiazole in 8 and sulfadiazine in 1.

The following reports represent characteristic types of febrile response:

Case I. H. D., a 19 year old student, was readmitted to the hospital five days after

11. Long, P. H., et al.: Toxic Manifestations of Sulfanilamide and Its Derivatives, J.A.M.A. 115:864 (Aug. 9) 1940.

being discharged following a radical bilateral antrum operation, complaining of bilateral frontal and maxillary pain, and a purulent nasal discharge associated with a temperature elevation to 38.3°C. (101°F.). Examination at that time revealed a bilateral frontal sinusitis and a septal abscess.

The septum was opened and drained, and the administration of 5 Gm. of sulfathiazole per day was begun. The temperature and pulse remained normal throughout the first seven hospital days. On the eighth day bilateral excision of the frontal sinus polyps was done. The temperature and pulse remained normal for seventy-two hours thereafter, and then began spiking to 40-41°C. (105-6°F.) as often as three times per day, with a total of seven severe chills during the next seventy-two hours (fig. 1). Repeated blood cultures, urine examinations and chest plates were negative; the operative wounds were healing with no evidence of secondary infection.

In spite of the frequent elevations of temperature a relative bradycardia had persisted, so the sulfathiazole was discontinued. The temperature promptly fell to normal, where it remained until the time of discharge. The highest blood concentration of sulfathiazole was 3.0 mg. per 100 cc.

Case II. A. J. B., a 19 year old student, was admitted to the hospital with fever, pain and swelling in the foot, which had begun as a blister on the dorsum and had become secondarily infected. On the night of admission he had a chill.

On the fourth day of therapy, his temperature rose gradually to 40°C. (104°F.), where it remained during the next four days (fig. 2), during which time there was an associated bradycardia. Although the local infection appeared to respond to therapy, the patient had several shaking chills. He stated he felt well, however, and complained only of the fever. Repeated examinations were negative. The highest blood sulfanilamide concentration was 8.2 mg. per 100 cc. with

CASE II. SUSTAINED TEMPERATURE, LEUKOCYTOSIS AND BRADYCARDIA \pm SULFANILAMIDE

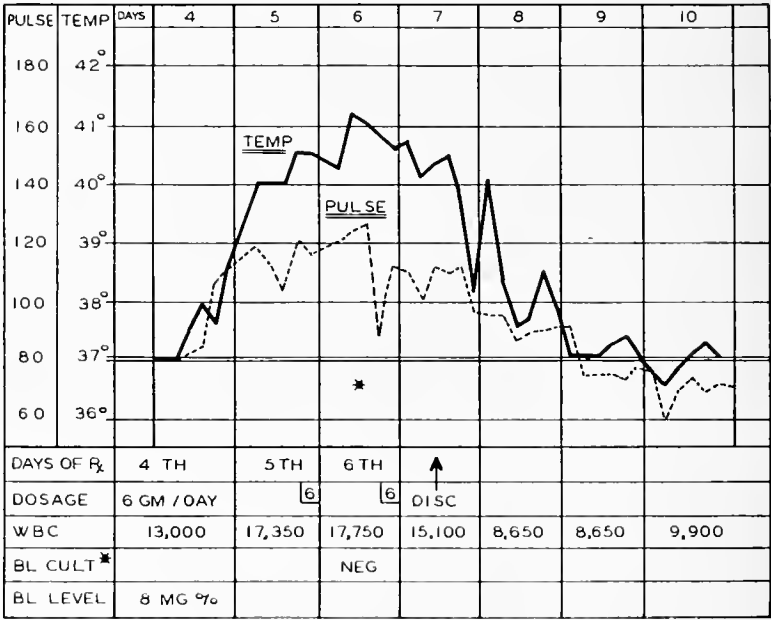


Fig. 2.

a 2 plus reaction for methemoglobin on the third day of therapy. Agglutination tests for typhoid, Brucella, Proteus X2 and X19 were negative. X-rays of the chest showed the lungs to be clear; plates of the right foot revealed no bony changes. Repeated blood cultures were negative. The urine was negative. Culture of the lesion gave Beta hemolytic streptococci and hemolytic Staphylococcus aureus. The leukocyte count, which on admission was 11,000 with 84 per cent polymorphonuclears, rose as high as 17,000, the differential remaining the same. Thirty-six hours after the drug was discontinued, the temperature returned to normal, where it remained for the duration of the hospital stay.

Case III. R. W. N., a 30 year old mill worker, was admitted with a history of a febrile illness of three weeks' duration, characterized by headache, sore throat and nasal discharge. He remained at work for two weeks, but nine days before admission collapsed and was found to have a temperature of 38.8°C. (102°F.) and a pulse of 118. At this time he began having a cough, productive of a small amount of purulent sputum, and during the week before admission he was given sulfanilamide. He then began to run a high temperature, became irrational and was hospitalized.

CASE III. SULFANILAMIDE FEVER & RELATIVE BRADYCARDIA
AND RASH SIMULATING TYPHOID FEVER

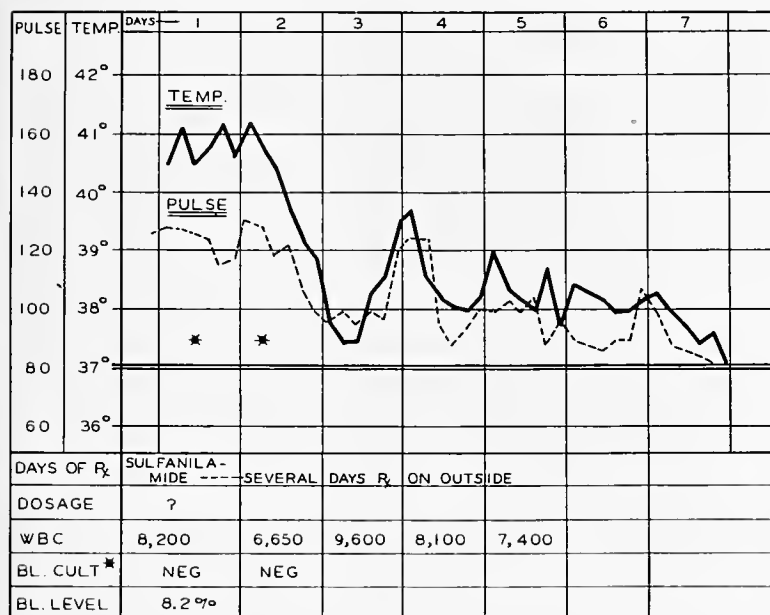


Fig. 3.

Physical examination revealed an irrational, uncooperative male. There was a red macular eruption over the lower thorax, cyanosis of the lips, nail beds and tongue, and a questionable papilledema.

Accessory clinical findings: The white cell count was 6,650, with 83 per cent polymorphonuclears; the urine and stool examinations were negative; x-rays of the lungs, sinuses and skull were negative; blood sulfanilamide was 8.2 mg. per 100 cc. with a 3 plus reaction for methemoglobin; the spinal fluid was normal; the Weil-Felix and Widal reactions were negative; repeated blood cultures were negative.

The temperature (fig. 3), which for the thirty-six hours after admission remained at 41.3°C. (106°F.), with an accompanying relative bradycardia, fell gradually to normal during the next seven days, and remained so throughout the remaining week in the hospital. The patient became oriented after the first twenty-four hours. Because of the high fever, bradycardia, mental confusion, and skin rash, together with the low normal leukocyte count, this patient was suspected of having typhoid fever.

Comment

It must be recognized that severe chills and relative bradycardia may be part of the

clinical picture of sulfonamide fever. The temperature chart may resemble that seen in typhoid fever, which, with leukopenia, may be misleading. The temperature often is very high, and when severe chills occur, may easily give the impression that more sulfonamide is indicated. Such patients, however, do not seem as ill as the temperature chart would indicate, and the fever usually subsides rather rapidly when the drug is discontinued and fluids are forced.

Conclusions

1. Fever is a frequent complication of sulfonamide therapy.
2. It may be accompanied by a relative bradycardia and severe chills.
3. These signs are an indication for the immediate discontinuance of the drug.

SYMPOSIUM ON INFLUENZA

MANIFESTATIONS OF THE RECENT INFLUENZA EPIDEMIC IN ADULTS

W. DEK. WYLIE, M. D.

In the past three decades a number of different agents have been described as the cause of influenza. It was not until 1933, however, that an etiologic agent was discovered which satisfied certain essential criteria. In that year, Smith, Andrews, and Laidlaw recovered a virus pathogenic for ferrets from the throat washings of patients with influenza and demonstrated that antibodies against this virus were produced during convalescence from the disease.

The 1940-41 influenza epidemic has been relatively mild. The vast majority of cases have shown only a pharyngo-tracheitis. This is quite a contrast to the 1918-20 epidemic, when most patients had a diffuse bronchitis or a bronchopneumonia. This difference is due, not to a marked change in human resistance to infection, but to the fact that the virus is milder.

During this year's epidemic, we were usually given a history of acute onset, with

Given before the Forsyth County Medical Society, Winston-Salem, March 11, 1941.

general muscular aching especially in the back and lower extremities, chilliness, tickling in the throat, and rawness in the chest, which usually referred to a sensation of irritation in the trachea.

On examination, we often found hyperemia of the tympanic membranes, edema of the nasal mucosa, diffuse hyperemia of the pharynx, and in some cases edema of the posterior pharynx. The cervical glands were seldom enlarged, the pulse rate was only slightly increased, and the heart sounds were usually normal. When the process was limited to the trachea and the larger bronchi, there were sometimes no signs, or there were coarse rhonchi which were due to accumulation of mucus in the larger bronchi, and which disappeared after cough. If the small bronchi were involved, the characteristic physical sign was rales. Occasionally we found isolated or confluent patches of the disease scattered throughout one or both lungs, indicating that the patient had reached the stage of bronchopneumonia. The abdomen was normal, reflexes normal, the temperature 101-103 F., varying with the extent of the disease, the blood counts showed a tendency to a leukopenia, and the urinalysis was normal. The electrocardiographic findings were those of a weakened heart muscle—i. e., low complexes, and variations in the size and shapes of the T and P waves.

The treatment consisted of rest in bed, fresh air, and forced fluids, with the administration of acetylsalicylic acid, phenacetin or acetanilid with codeine and atropine. Under such treatment, the milder forms subsided after three days.

Occasionally we found in this mild epidemic a different type of case. Probably this was due to a weaker individual resistance, or to the reappearance of a virus of the 1918 potency. The following case is illustrative.

A woman, aged 63, complained of aching, chill, and soreness in the chest. Upon examination, she was found to be cyanotic, with a pulse rate of 140, and a temperature of 104 F. The right two lower lobes were consolidated. The leukocyte count was 8500, and the sputum was negative for pneumococci. Since this virus had produced an extensive lobar pneumonia, I could not content myself with the therapy used in the numerous mild cases of tracheobronchitis. This patient was given sulfathiazole for thirty-six hours. At the end of this period she was

afebrile, and remained so for five days, while showing signs of resolving pneumonia. However, on the sixth day she developed a pain at the base of the left lung, with a temperature of 103 F. Her respirations were shallow, and she became very cyanotic. With her right two lower lobes still semi-consolidated, and her left lower lobe consolidated, she did not have much space for respiration. Oxygen was started and sulfathiazole was given. The oxygen relieved the cyanosis promptly, respiration was no longer labored, and after thirty-six hours the sulfathiazole had produced a crisis.

In this mild epidemic there was an occasional otitis media. This was in marked contrast to the epidemic of 1918, which produced many cases of empyema.

I wish to emphasize the importance of oxygen in the treatment of pneumonia patients. In the cyanosis and suffocation sometimes seen before the crisis is reached, the one thing that may tide the patient over a few hours through the crisis is oxygen. The modern intranasal apparatus is not very expensive, and the commercial tanks of oxygen which last twenty-four or forty-eight hours are not difficult to secure. This apparatus can be set up in any home and manipulated by a relative or a practical or trained nurse.

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INFLUENZA IN CHILDREN

C. A. STREET, M. D.

Influenza in children is very similar to that in adults. The cause is now believed to be filterable viruses of different strains, present in the respiratory tract. Influenza is highly contagious, especially during the early stages of the disease, and is spread mainly by the coughing and sneezing of the infected individuals. As the immunity conferred by an attack is relatively short, a large proportion of the population is susceptible at any time, although children under 5 years are less susceptible than older ones. People between the ages of 5 and 40 are more often victims of the disease than those older and younger.

The incubation period is usually one to three days. The onset is sudden, with fever, chills, rather marked prostration, and catarrhal symptoms in the nose, throat, or trachea. At times there may be a very distressing cough.

The severity of the disease in children is not necessarily determined by the degree of fever, as some children with temperature as

high as 104 or 105 F. have not seemed so ill, been so prostrated, or taken so long to recover as others with fevers of 100, 101, or 102 F. Complications seem to occur just as often in patients whose fevers have remained low.

The fever in uncomplicated influenza comes down in the majority of cases in two to four days, but convalescence is often prolonged for several days. Treatment for these cases consists of rest in bed until convalescence is well established, large quantities of fluids, food as desired, isolation as much as possible, and sedatives as needed. Some children vomit a great deal, and complain of abdominal pains, but headache and muscular aches and pains are not very common except in older children.

Complications occur in about 15 per cent of the cases. The most common complications are otitis, sinusitis, bronchitis, and pneumonia. Blisters are frequently seen on the ear drums, and otitis media in varying degrees of severity is fairly common. Most cases respond to sulfathiazole, and it is seldom necessary to open the ear drums. Most cases of bronchitis also respond to sulfathiazole, but not so promptly as do cases of otitis media or pneumonia.

Pneumonia has not been very common in this epidemic, and the majority of cases have responded promptly to sulfathiazole. I have had some cases following influenza, however, which did not respond to sulfathiazole or to sulfapyridine. I suspect that these were due to the influenza bacillus. I have not used sulfathiazole routinely in treating influenza, but have used it where I was sure of, or strongly suspected, complications due to secondary infections. I doubt if it has any influence on the primary disease. Gastrointestinal symptoms, especially vomiting, have been very common in this epidemic, and because of the vomiting, I have given less sulfathiazole than I would have used otherwise.

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INFLUENZAL INVOLVEMENT OF THE UPPER RESPIRATORY TRACT

J. A. HARRILL, M. D.

In the consideration of influenza or of any of the acute infectious diseases that attack the upper respiratory tract, some thought should be directed to the special anatomical arrangement of this region.

The surface of the nasal respiratory mucous membrane contains an abundance of

cilia covered by a thin sheet of mucus. The action of the cilia is such that the posterior part of the nose receives a new coating of mucus every ten to fifteen minutes. This coating is the first line of defense. Any departure from the normal mucous secretions for an hour will allow a germ or a filtrable virus to pass this defense and invade the mucosa. Bacteria can be demonstrated in the epithelium and in the underlying loose connective tissue in disease. The abundance of mucoid secretions following this stage of invasion may be due to the presence of the germ or virus or to a derangement of the secretory parasympathetic innervation.

In most other parts of the body the periosteum is separated from the surface by some distance, while in the nose it is separated from the mucosa only by a thin layer of connective tissue which gives very little protection from an invader.

The nose, itself, is the most protruding feature of the face. It probably receives its first injury in its journey through the birth canal, and for the next three score and ten years it receives more than its share of falls and blows. The presence of deflection, dislocation, and spurs of the nasal septum plays an important part in the production of sinus complications that follow influenza.

Two paranasal sinuses, the maxillary and the sphenoid, do not have dependent drainage. Any prolonged blockage, especially to these two sinuses, is likely to lead to sinus suppuration. The very severe and prolonged reaction which occurs in influenza places this acute infection as the number one producer of accessory sinus disease. It has been estimated that the sinuses are diseased in at least 75 per cent of the cases. The percentage of involvement varies in individual epidemics. The frequency of involvement of the individual sinuses also varies. The antrum is usually affected in 70 per cent, the sphenoid in 65 per cent, the ethmoid in 50 per cent and the frontal in 25 per cent of cases.

Nowhere in the body can a sensory ganglion be found that is so exposed to surface influences as is the sphenopalatine ganglion. The influenza virus can easily gain access to this ganglion and disrupt the delicate balance between the sensory, sympathetic and parasympathetic systems. Inflammation within this ganglion may produce many symptoms. Other than the local nasal disturbances, pain may be present at the root

of the nose, about the eye, the upper jaw and teeth, the temple, and in and about the ear. In moderately severe cases pain may extend backward over the occiput and neck to the shoulder blades. In more severe attacks the pain may extend down the arm, forearm, and hand to the fingers. Mild symptoms such as aching throat, itching sensation in the hard palate, or a feeling that the teeth are too long may be present.

Influenzal tonsillar infections are usually mild. Severe tonsillitis and peritonsillar abscesses are not common occurrences, but here again the severity varies in different epidemics. Marked swelling of the pharyngeal bands with more pain than usual commonly occurs when the infection involves the pharynx. The pain is likely to be persistent and is very resistant to treatment. In the nasopharynx the dome becomes fiery red and capillary oozing may occur. In the hypopharynx and larynx the inflammation is often very painful, possibly because of a myositis of the cricopharyngeal and the laryngeal muscles. If the cricopharyngeal is involved alone, there is usually marked pain on swallowing. In the larynx, paresis of the adductor and tensor or abductor muscles of the vocal cords may occur. The inflammation within the mucosa of the larynx may be slight or severe, and clinically cannot be distinguished from other forms of acute laryngitis, although its course is usually longer and it leaves the patient with a spasmodic cough for weeks. Edema of the larynx may occur, necessitating tracheotomy. When this condition exists, it is usually seen in children under 3 years of age.

The incidence and severity of influenzal otitis vary greatly in different epidemics. Pain is the most prominent symptom, and is usually preceded by a sensation of fullness in the head. A hemorrhagic tendency is characteristic of influenza, and when the ear is involved, hemorrhagic bullae may often be seen on the drum and posterior canal wall. In a large number of cases the middle ear is also involved. The organism usually found in the otitis infection is the hemolytic streptococcus. The course of the disease from this stage depends upon the virulence of the organism, the resistance of the patient, the type of mastoid, and the response to sulfanilamide or sulfathiazole.

THE NEUROLOGICAL AND PSYCHIATRIC ASPECTS OF INFLUENZA

ELBERT A. MACMILLAN, M.D.

Influenza has certain neurological and psychiatric aspects which are non-specific and may be present with any acute infection, and certain ones which are specific and apparently a direct outgrowth of the infection. The delirium which occasionally is noted in the acute stages of the disease does not differ greatly from that seen in many other febrile states. It does seem to be true that mild confusional states are noted with more frequency in influenza than in other infections producing a similar elevation of temperature. The most striking psychiatric outgrowth or complication of influenza seems to be mental depression. Most individuals who have suffered even a mild attack of influenza can testify to the melancholy state which has been found to follow it. This depression may vary from the very mildest form to a condition of desperate depression occasionally leading to the need for institutional care. These symptoms are quite obviously more pronounced in individuals who have a background of emotional instability; and in a person who has suffered a previous episode of manic-depressive psychosis, a severe case of influenza is likely to result in a recurrence of this disorder. In such a case a depressed phase of the disease would be the more likely, although at times a state of hypomania has been found to result. More common than these major disorders, however, are the mild depressive states which frequently result in loss of time from work and loss of productive capacity out of proportion to the severity of the disease. It is certain that a great proportion of the psychiatric complications of influenza are due to the physical weakness and glandular depletion which follow the disease. It should be mentioned that on fertile soil influenza may serve as the precipitating factor for any type of mental disorder. Psychoneurotic patients almost without exception are disabled for periods of more than average length by the disease. Many of the vague symptoms which follow influenza are characteristic of the psychoneurotic. Incidentally, it has been my experience that influenza goes much harder with the average Negro than with white patients. The high incidence of sick-benefit insurance among the colored may be suspected of playing some part in this situation.

The neurological complications of this disease are of greatest interest. First on the list of these disorders comes encephalitis. It must be emphasized that the relation of influenza to encephalitis is not yet thoroughly understood. Much of the confusion here arises out of the interrelationships of the pandemics of encephalitis and influenza. Grinker points out that both diseases might be caused by the same virus or that encephalitis might be a complication of influenza. Another theory is that there are several viruses of influenza, and that a neurotropic virus is present when encephalitis, neuritis and other neurological complications are present. During the 1918-1920 epidemic of influenza many patients developed the post-encephalitic syndrome after suffering apparently typical attacks of influenza. The true post-influenzal encephalitis is said to differ pathologically from epidemic encephalitis. Time does not permit of a full discussion of influenzal encephalitis and its disabling sequelae. It should be said, however, that in any case of influenza in which drowsiness, mental confusion, ocular palsies, unusually severe headache, and some stiffness of the neck are noted, encephalitis should be suspected, and a lumbar puncture done. Incidentally, the most important laboratory procedure to be performed on spinal fluid taken from a suspected case of encephalitis is a quantitative sugar determination. A blood sugar determination should be made at the same time and the two should be compared. The normal spinal fluid sugar is roughly half of the blood sugar. In encephalitis the spinal fluid sugar is almost always increased, at times approaching the blood sugar level.

Another interesting, though rarer complication of influenza, is the so-called acute disseminated encephalomyelitis. This is a condition in which there are widely diffused areas of acute degeneration in the white and gray matter of the central nervous system. The onset is usually sudden, with headache, stiffness of the neck, and variable sensory and motor disturbances. There is usually a paraplegia and bladder paralysis. There is no effective treatment, and the condition is followed by recovery in about 50 per cent of the cases.

Influenzal meningitis is a rare and almost always fatal complication. Unfortunately, none of the sulfonamides have proven bene-

ficial in this condition. The disease is usually fatal within forty-eight hours.

Neuritis of various peripheral nerves is often seen as a complication of influenza. Occasionally this is a highly specific condition affecting one cranial nerve.

I have seen two cases of paralysis of the sixth nerve after influenza, both of which recovered.

In addition to influenzal meningitis, certain other of the meningitides, particularly pneumococcic, sometimes follow influenza. The intense congestion and even destruction of the mucous membranes of the nasopharynx render the patient more susceptible to secondary invaders.

Discussion

Dr. Stephenson: I would like to have someone explain the disturbance in the endocrine gland system, particularly the pituitary and ovaries. This usually involves two menstrual periods, and in several patients who were pregnant there were miscarriages or threatened abortions. Probably all women noticed some alteration of the cycle. There was often flooding during the first menstrual period following influenza, and several patients skipped a period altogether following the disease.

Dr. B. Pool: It is due to glandular depression.

Dr. Henley: I would like for someone to explain the backache accompanying influenza.

Dr. Wylie: It is due to toxemia of the infection.

Dr. B. Pool: Would you use sulfathiazole with a heavy albuminuria in an elderly patient with consolidation?

Dr. Wylie: No. I would use x-ray therapy.

Dr. Pool: Dr. Street spoke of the vomiting in children. He didn't tell whether it was before or after the use of sulfathiazole. He said he did not use sulfathiazole until there was a secondary infection. I would like to know where is the primary infection? Is the primary infection always in the same place? I would also like to know if this influenza is as common in people who breathe through the nose as in those who breathe through the mouth. I recall one family, all of whom had it. They were all healthy looking but were all mouth breathers.

Dr. Street: A great number of children have vomited very persistently without having had sulfathiazole. Others have vomited only after having had the drug. In those cases where it could not be retained by mouth, rectal administration has been very satisfactory.

The primary virus infection is most generally, if not always, in the trachea and the upper respiratory tract. This virus infection most probably makes the respiratory tract more susceptible to secondary bacterial invasion; it prepares the ground, one might say. But just where the influenzal infection leaves off and the secondary infection begins is hard to say. Therefore one may use sulfathiazole at any time with hope of getting results.

Dr. Harrill: The ideal way for influenza to enter the body is through the nose. It does not always enter through the upper respiratory system. Patients with nasal obstruction are subject to acute attacks of upper respiratory diseases. The patients to which Dr. Pool referred are ideal cases in which the influenza virus could gain access to the body through the nasal mucosa, owing to deranged physiology.

Dr. E. S. Avery: Influenza is a systemic infection due to a filtrable virus. When the virus reaches a certain concentration in the blood stream the person is taken ill with influenza, often with dramatic suddenness. If the concentration in the blood stream is not sufficient to overcome the defensive forces of the body the person does not become seriously ill, but goes about with what might be called, for want of a better term, "walking influenza", suffering with general malaise, slight aching in the joints, and chilly sensations often described as chills "running up and down the spine."

Following the first infection with the influenza virus, bacteria initiate a descending infection of the upper respiratory tract, including the soft palate, pharynx, larynx, trachea, and bronchi, and later, perhaps, the lungs. The organism starting this descending infection is said to be the influenza bacillus, which in malignant infections actually penetrates the walls of the bronchi, weakening the wall and paving the way for other organisms to follow. This weakening of the wall of the bronchi is undoubtedly a factor in the causation, later in life perhaps, of bronchiectasis.

The influenza bacillus may directly cause pneumonia, but more often following the influenza bacillus invasion of the bronchial wall secondary invaders such as the pneumococcus, streptococcus, staphylococcus, or Friedlander's bacillus, enter through the weakened and dilated bronchial wall and cause pneumonia.

A third infection usually by hemolytic streptococci may further infect the pneumonic areas, and this often leads to multiple lung abscesses.

Cyanosis nearly always accompanies infection with the influenza bacillus. This undoubtedly is due to the fact that the influenza bacilli require two factors for their growth—one, an X factor derived from hemoglobin, and the other the V factor which occurs in blood also. The influenza bacillus is aerobic and uses the oxygen from the blood through the action of these two growth factors mentioned above; hence, the cells fail to get oxygen and cyanosis results.

There are apparently five forms of influenza: (1) The ordinary form in which there is no coryza, and which apparently is a pure form of infection with the influenza virus. Fever may be high in this form and prostration marked. (2) The respiratory form, which is too well known to need comment. (3) A type where nervous manifestations are the most prominent feature and even psychosis may develop. Encephalitis may follow this type of influenza, but may follow other types as well. (4) A gastro-intestinal form, with vomiting, diarrhea, etc. There has been much debate as to whether such a form actually exists. (5) A malignant form where the patient develops pneumonia and dies in twenty-four to forty-eight hours. This was seen in 1918, and is accompanied by marked cyanosis.

Dr. J. P. Rousseau: I agree that the influenza we saw in 1918 was entirely different in many respects from that which we are seeing today. I am not willing to say that there was a difference etiologically or bacteriologically. There was a marked difference in the clinical symptoms, the roentgen findings in the chest, the response to therapy, and the mortality rate. I saw many of these cases in the 1918 epidemic, and also saw many x-ray films of the chest in which the findings were grossly different from the ones we see in the x-rays of the patients who suffered from influenza in this year's epidemic. In the World War epidemic, there were extensive lobar consolidations, in some cases an entire lung or both lungs being rapidly involved; the disease showed rapid progression and an early fatal termination. Today the roentgen findings in the

chest are chiefly a tracheobronchitis, small areas of virus pneumonitis, or small patchy areas of bronchopneumonic consolidation. Dr. Wylie has very clearly pointed out the value of sulfonamides in the treatment of the disease in this epidemic. There are cases, however, that occasionally fail to respond to the newer methods of chemotherapy, and it is in these cases that I feel that roentgen therapy has a definite place. Experience in the past has shown that some of these cases do not respond to sulfathiazole, and it is in these cases that the use of roentgen therapy has been found of value.

MIXED INFLUENZA BACILLUS-STAPHYLOCCUS MENINGITIS CURED WITH SULFONAMIDE THERAPY

R. WINSTON ROBERTS, M. D.

Duke Hospital

DURHAM

Reports of cures of meningitis have ceased to be a novelty since the advent of sulfonamide chemotherapy. This case is reported because the meningitis was caused by a mixed infection with two organisms, either of which singly still carries a high mortality rate in meningitides, and because of interesting problems encountered during treatment with sulfonamides.

Case Report

W. R., an 11-month old negro boy, entered Duke Hospital on May 22, 1941, with a chief complaint of a stiff and painful neck for five days before admission. The family history and past history were non-contributory. Five days before admission the patient's mother noticed that he seemed to have fever and was irritable, and soon thereafter he began to hold his head drawn back and to cry on any motion of his neck. These symptoms continued without improvement, and three days before admission he became listless and stuporous. At that time slight swelling was noticed behind the patient's right ear, but this subsequently subsided. The patient had had no vomiting before admission and had received no medication except castor oil.

The temperature on admission was 39.6 C. (103.4 F.). The patient was a well-developed, well-nourished, Negro boy of about 11 months, somewhat stuporous, but otherwise appearing only moderately ill. The posterior

auricular lymph nodes were palpable. The anterior fontanelle was bulging and palpably pulsating. The ear drums were slightly hyperemic, and the tonsils and pharynx were inflamed. The neck was very stiff and was held in a position of moderate opisthotonus. The Kernig and Brudzinski signs were strongly positive bilaterally. The examination was otherwise not remarkable.

On admission the hemoglobin was 52 per cent; the red blood cell count 3,810,000; the white blood cell count 13,800. The differential white cell count showed 35 per cent segmented neutrophils, 29 per cent stab forms, 7 per cent juvenile forms, 3 per cent lymphocytes, 25 per cent small lymphocytes, and 1 per cent monocytes. The urine contained a trace of albumin and acetone. The stool examination, and Shick, tuberculin, and Wassermann tests were negative. The spinal fluid was very cloudy and thick, with a 4 plus Pandy test and a cell count of 13,100, predominantly polymorphonuclear cells. Ventricular puncture was also done on admission, and the ventricular fluid was thick and cloudy, with a cell count of 25,000. Stained smears on both spinal and ventricular fluids revealed gram-positive cocci and questionable gram-negative bacilli, which on culture proved to be *Hemophilus influenzae* and *Staphylococcus albus*. A blood culture and x-rays of the chest, sinuses, and mastoid regions were negative.

On admission the patient was started on sulfathiazole by mouth (1 Gm. immediately and 0.4 Gm. every four hours), and because of the very thick and purulent fluid obtained on lumbar and ventricular punctures, the fluid withdrawn was replaced with 10 cc. of a 2 per cent distilled water solution of sodium sulfathiazole given intrathecally. This intrathecal administration of sodium sulfathiazole was repeated on the patient's third, fifth, and seventh days in the hospital. Almost immediately after the last intrathecal administration of sodium sulfathiazole, on the seventh hospital day, the patient developed Cheyne-Stokes breathing, a weak, irregular pulse, and a generalized, fine, vesicular rash; he became quite flaccid, appearing moribund. He was given oxygen and stimulants, and, since it was felt that his sudden collapse was due to a reaction to sulfathiazole, the drug was changed to sulfadiazine by mouth (0.75 Gm. immediately and 0.5 Gm. every four hours). During the period of intensive chemotherapy with sulfa-

thiazole and sulfadiazine the spinal fluid levels of both ranged from 2 to 5 mg. per 100 cc. In addition to the therapy outlined above, parenteral fluids and blood transfusions were given as needed. The patient's improvement was slow but steady. His temperature rose to 41 C. (106.8 F.) on his second hospital day, but fell following that, to range in general from 38 C. (100.4 F.) to 39 C. (102.3 F.) for his first two weeks in the hospital. The following week it gradually approached normal, and for the remaining two weeks in the hospital the patient's temperature was completely normal. The spinal fluid cleared rapidly, with the cell count falling to 500 white blood cells, largely mononuclears, by the seventh hospital day, and to normal by discharge. The staphylococci failed to grow from the spinal fluid cultures after the third hospital day, and the influenza bacilli failed to grow in repeated spinal fluid cultures after the fourth hospital day. The sulfadiazine was continued in gradually decreasing doses despite the negative cultures until two days before the patient's discharge, five weeks after admission. At discharge he had lost all signs of meningeal irritation and was gaining weight and playing happily. The patient's hemoglobin fell during his first two weeks in the hospital but was restored by transfusion and subsequently stayed up well.

Summary

1. Cure of a case of meningitis caused by *Hemophilus influenzae* and *Staphylococcus albus* is reported.
2. Treatment with sulfathiazole and sulfadiazine in this case is outlined, and a severe reaction following intrathecal administration of sodium sulfathiazole is described.

The Limitations of Digitalis.—It is my impression that the limitations of the usefulness of digitalis are not universally appreciated. Not all disorders of the heart are benefited by this drug. Among a case load of about 1,500 active patients with all manner of heart diseases at present in attendance at our cardiac clinics, only about 1 out of 7 is dependent upon digitalis . . . Only about 15 per cent of cardiac patients owe to the habitual use of digitalis the fact that they are able to carry on with a reasonable degree of comfort. The reputation of the drug is not enhanced, to say the least, by its use in the remaining 85 per cent of the cardiac population.—Harry Gold: *Digitalis: Its Action and Usage*, M. Ann. District of Columbia, 10:127 (April) 1941.

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WEASEL WORDS

Words are supposed to be instruments for the expression of thought, but it is remarkable how often they reverse this function and control the process of thinking. The literature of medicine is filled with illustrations of this phenomenon, but nowhere has it borne such curious fruits as in the sprue syndrome.

Sprue was first described by physicians in tropical lands, and English writers have held with characteristic tenaciousness to the opinion that sprue is always a "tropical" disease. This has led them into almost incredible absurdities. Bennett, following the example of other English writers, designates an instance of sprue which developed in a patient who had not been in the tropics for thirty-five years, "delayed" sprue. If this sort of reasoning is permissible, there are few diseases that could not be called "tropical"!

Furthermore, when, as happens occasionally, long-existing sprue becomes irreversible, and fails to make the usual brilliant response to liver therapy, English writers insist that this is not sprue but "idiopathic steatorrhea"—a term totally devoid of mean-

ing. When the sprue syndrome occurs in infants it receives still another name, "coeliac disease", and when the syndrome is observed in regions which are far from the tropics, like Denmark, Germany and the temperate or northern United States, it is termed "non-tropical sprue". Thus does the tyranny of words dominate thought, to the great confusion of all concerned.

Curiously enough, all competent writers agree that the clinical, metabolic and biochemical features of the sprue syndrome are found identically in sprue, non-tropical sprue, idiopathic steatorrhea and coeliac disease. Such variations as are encountered are commonly observed in many, if not all, other disease syndromes. One has only to think of hyperthyroidism, tuberculosis, or rheumatic fever to encounter variations even more pronounced than those observed in the sprue syndrome.

There are vocations—theology or law, for example—in which the torturing of words into strange meanings seems to many a desirable objective, but in medicine such activities only obscure the truth. Clearness and perspicuity are still the true eloquence of science.

* * * *

THE NEW DISEASE

American physicians must prepare to cope with a new disease. It is becoming generally prevalent and may reach epidemic proportions and severity. It is contagious, and attacks all without discrimination, including those who fill the ranks of the trades and the professions.

By virtue of their training, their ethics, the nature and the demands of their profession, doctors are especially susceptible to the contagion. Until it is better named, the new disease can be called "War Fever". The future effectiveness of American medicine and the future status of the American doctor will be determined by the extent to which individual physicians are successful in immunizing themselves against the hysteria which is a symptom of the disease and which always accompanies it.

The world is at war. One hundred and thirty million Americans are very much a part of this world. It is a wholly new kind of war. In times past, material advantage and territorial gains provided the incentive for wars of aggression. This is a war of ideological conquest. Material advantages

and territorial gains are merely incidental to the larger purpose. It is an all-out warfare, spending lives and treasure on a scale never before contemplated or even imagined by man.

In the present situation there are too many uncertainties to enable either the wisest or the best informed reasonably to predict the extent to which it may be necessary to sacrifice the lives and material resources of this country in order to win this war. It is a known fact—and it should be faced—that we are in the process of mobilizing all of our energies and utilizing all of our resources for the accomplishment of this purpose.

No group will be called upon to make a greater contribution than will be expected from the medical profession. It is needless to say that this contribution will be gladly, cheerfully made by American physicians. American doctors do not expect any special credit for the important service they are rendering or will be called upon to render. Their tradition, their training and experience make this attitude inevitable. Many are already enlisted for the duration. The rest will be ready when called.

However, the greatest national danger lies in the possibility of these doctors' becoming victims of the "new disease". On them rests a new and most vital responsibility. It is of the utmost importance that these physicians ever keep in mind that the war itself is one of ideologies; that our first obligation and most difficult task is to preserve the priceless heritage of the American people that has set them over and above and apart from all the other people in the world. It is desirable to consider carrying the "four freedoms" to all the people in the world. But it is essential that we maintain our own independence and freedom of action; "for what shall it profit a man if he shall gain the whole world and lose his own soul?" It is our task now to "hold fast that which is good."

Tomorrow will come the peace. While we unselfishly and unlimitedly serve, we should make sure that the stifling control of bureaucracy is not permanently established. We should take steps to insure the preservation of the sacred doctor-patient relationship, the independence of the physician, the continued progress of American medicine and the safeguarding of the public interest.

Medicine's planning and administrative

agency in these fields is the National Physician's Committee for the Extension of Medical Service, Pittsfield Building, Chicago, Ill. It has demonstrated both its reliability and its effectiveness. In these times of increasing stress it should have the allegiance and financial support of every patriotic practicing physician. If your county association has not appointed an official committee to cooperate with the National Physicians' Committee it should do so at the next regular meeting.

* * * *

THE CONTROL OF VENEREAL DISEASE

In a recent special article in the *Journal of the American Medical Association*, Vonderlehr⁽¹⁾ and others discuss at length certain recommendations for a nation-wide venereal disease program. Most of the article is devoted to the public health mechanics of the program, such as organization, morbidity statistics, laboratories, "case finding and case holding", and all the other paraphernalia so dear to the minds of public health officials. Toward the end of the article there is a brief paragraph on the prophylaxis of venereal disease.

This article is a perfect reflection of the current enthusiasm in venereal disease work for noisily slamming the door after the horse has escaped. Great sums are being expended now for the establishment of clinics for the *treatment* of venereal diseases, but how much is being spent in the *prevention* of such maladies? If we were morally civilized we would face this age-old problem, recognize its fundamentally biologic nature, and through education in our schools and the establishment of public prophylactic stations make a rational attempt to protect our people from venereal infection. The ignorant, medieval doctrine that venereal disease is a just punishment of sin, and, therefore, should not be prevented, finds support today only in the type of mind that believes a horse hair will turn into a snake if placed in a bottle of water.

Persons affected with venereal disease certainly should be treated, but not with the belief that such treatments materially lessen the incidence of venereal diseases; all evidence is to the contrary. There are well known and thoroughly tested prophylactic measures which, when used properly, pre-

vent venereal infections. Our social reformers seem to have forgotten the copy-book maxim that *an ounce of prevention is worth a pound of cure*.

1. Vonderlehr, R. A. et al.: Recommendations for a Venereal Disease Control Program, J. A. M. A. 116:2585 (June 7) 1941.

* * * *

OBESITY

The obese person has always been considered a legitimate object of mirth, tinged with ridicule. We are told that there are three stages of obesity: the enviable, the laughable and the pitiable. One wit has pointed out that all life's pleasures are illegal, immoral or fattening. This light-hearted view of obesity may be excused in the laity, who, often enough, associate overweight with robustness of health, but no intelligent physician will share this optimism.

Obesity is one of the most serious of diseases, and, with its associated maladies, is the predominant cause of death after the age of 50. If one doubts this, let him study the causes of insurance deaths. He will find that overweight is associated with diabetes, nephrosclerosis, chronic arterial degeneration, hypertension with cardiac failure, apoplexy, coronary sclerosis and occlusion in such a large percentage of deaths after 50 that one may safely assume a common origin of these conditions in a surprisingly large number of people. The wise underwriter of insurance policies will not accept obese applicants, for the hazards involved can not be reduced to the relative certainty of mortality tables. It is the common experience of physicians that such patients are poor operative risks, that they react badly to severe accidents, and that infections of all kinds are liable to be more serious with them than with normal patients. Confronted, then, with a widespread and serious malady, it behooves physicians to inquire very earnestly into the causes of obesity and the means for its alleviation.

Much has been written upon the subject. One of the more recent contributions is that of Julius Bauer⁽¹⁾, who reviews exhaustively the various current theories as to the nature of obesity. Obesity, says Bauer, is the out-

ward expression of a constitutional make-up, a congenital, genetic tendency toward marked overweight, resulting in an abnormal accumulation of fat by this type of person when left to his own automatic regulations, without supervision of his food intake and energy expenditure. A large and uncontrolled appetite is one of the symptoms of this type of constitution. In other words, obesity—like pernicious anemia, for example—is born, not made. One either has, or has not, a body that will, or will not, accumulate fat in pathological amounts.

The normal person can vary his intake of food within wide limits without growing obese, and it is an everyday observation that certain people can eat enormously and yet not become obese. Their nervous and endocrine regulatory apparatus permits this, whereas others grow obese on much less food. However, all fat, whether it be expressed as hypernutrition or obesity, is the result of food intake and can only be regulated safely by diet. Thyroid extract may be used if its administration is carefully supervised, but it is not indispensable.

In a very small number of cases the cause of obesity is either a true endocrine lesion or an alteration in the function of certain cerebral (hypothalamic) centers, but in the vast majority of instances it is a genetically determined constitution. To be a little more specific, Bauer believes that the fatty tissues of the body show, in the obese, a pathological alteration of function, an exaggerated lipophilia, which is in turn the result of an alteration in the neurologic and endocrinal regulation of fat deposition.

Obesity, then, can be regarded as a constitutional disease, seldom due to a specific, identifiable injury to any of the glands of internal secretion, but rather to a disharmony in the hormonal control of fat utilization and deposition. The fat man (or woman) is more to be pitied than censured, for he is a sick man with a sombre prognosis unless intelligently treated.

1. Bauer, Julius: Obesity, Arch. Int. Med. 67:968, 1941.

* * * *

With this issue the editorial office of the NORTH CAROLINA MEDICAL JOURNAL is moved from 428 Stratford Road to the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem. Manuscripts and communications should be sent to this new address. Visitors will always be welcome.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

DURHAM

DR. E. L. PERSONS (Reading the Clinical Summary): This housewife of 39 entered the Duke Hospital October 30, 1940, brought by her brother, who requested that she be studied because of a progressive illness of three years' duration. Except for headaches and fairly frequent colds with sore throat, which had required little medical attention, her general health had been fairly good until three years ago. The patient, her 12 year old child, and the husband, who was a disabled veteran of 46, had been living on a small farm with a pension of \$50.00 and additional help from the patient's family.

Three years before admission the patient noted that exposure to cold water caused the skin of her hands to blanch and then turn blue, and produced considerable aching in the fingertips. This phenomenon gradually increased in severity and there was progressive thickening of the skin over the hands, arms, and later the entire body. The joints of the fingers became markedly stiffened, and the joints of the feet were also affected.

The patient's appetite became variable, and for two and one-half years before admission there was an intermittent diarrhea, described as occurring "alternate weeks." There were five to eight stools daily with mucus and jelly-like material, but no blood or pain. The tongue became sore at intervals and was noted to be smooth between periods of inflammation. She lost weight gradually from 170 to 148 pounds. About one year before admission she began having attacks of "stabbing" right upper quadrant pain, lasting a whole day, not associated with digestive symptoms.

Three months before admission she developed some "raised, red, boil-like" lesions on the back of the legs. These were so painful that she went to bed, and strength was never regained. She began to have a sense of constriction in the chest on exertion, and was awakened at night by paroxysms of dyspnea. She developed a cough productive of small amounts of mucoid sputum, and found it necessary to sleep on two pillows.

The menses, which had been regular, began to occur at two to four week intervals. No fever, no cyanosis, and no edema had been noted.

Over a period of eighteen months, starting in 1938, all the teeth had been removed because of multiple abscesses. Her physician reported that the blood pressure had varied from 135 systolic, 80 diastolic to 115 systolic, 60 diastolic, and that studies of the stools for amebas had been negative. Treatment had included much iron and copper by mouth and liver by mouth and by injection.

Physical examination showed normal development and the appearance of normal nutrition, but the skin was thickened, tight, and appeared slightly edematous over the whole body, more taut over the hands and fingers. There were numerous telangiectases over the arms, forearms, and hands, and scattered spider angiomas over the anterior trunk. The hair was coarse. The veins of the forehead were distended and "pulsating."

The temperature on admission was 38.5 C. and it remained quite constantly at that level until death. The pulse ranged from 88 to 120, averaging about 106. The blood pressure was 112 systolic, 92 diastolic.

The mucous membranes had good color, and there was no lymphatic enlargement. The eyelids showed sclerodermatous changes, and the conjunctivas were slightly red; but there was no icterus and the pupils and retinas were normal except for slight venous engorgement. The nose and ears were normal. The tongue showed papillar atrophy and was slightly red. The tonsils and pharynx were also hyperemic.

The neck showed moderate venous distention, but the trachea was in the midline and there was no thyroïd enlargement. No nodules could be felt.

The chest was symmetrical, but the expansion was somewhat limited by the thickened skin and an enlarged, tense abdomen. There was some respiratory distress, with a rate of 24. The lungs showed normal resonance, with medium and fine rales throughout both lower lobes. There was a heaving impulse over the precordium and the heart was enlarged to 12 cm. to the left in the fifth interspace. The rhythm was regular but the sounds were diminished in intensity.

The abdomen was distended, apparently with fluid, although it was difficult to demon-

strate shifting dullness. The liver, extending 6 cm. below the right costal margin, was slightly tender. The spleen could not be palpated. Pelvic and rectal examinations were normal. No local motor or sensory loss was discerned, and there was no loss of reflexes. The skin of the extremities was so thickened that no arterial pulsations could be felt except for a very slight beat in the radial arteries. This limitation of pulsation was confirmed by oscillometer readings. The legs showed no edema or varicosities, but became markedly cyanotic when dependent.

The hemoglobin was 92 per cent. There were 5,400,000 red blood cells, with 0.8 per cent reticulocytes. Aside from slight microcytosis and anisocytosis, the red cells and platelets were normal. There were 4460 white blood cells, with 62 per cent polymorphonuclears, 5 per cent large lymphocytes, 12 per cent small lymphocytes, 1 eosinophil, 3 mononuclears, and 17 Rieder cells. The sedimentation rate was 36. The Wassermann and Kahn tests were negative. Examination of the urine showed the specific gravity to be 1.013. There was a 3 plus reaction for albumin, and no sugar. Microscopic study showed 5-10 white blood cells per high power field, many granular and hyaline casts, and occasional red blood cells. The stool was soft, light brown in color, and there were no parasites or occult blood. Fat supplied 41 per cent of the weight of a dried specimen. Free acid was present in the stomach contents after the injection of histamine. The fasting blood sugar was 101 mg. per 100 cc. The van den Bergh reaction was indirect, with 1.4 mg. bilirubin per 100 cc. There was 8 per cent retention of bromsulfalein one hour after injection of the dye. A biopsy of the skin was performed.

The patient was put at bed rest and given three cat units of digitalis daily. On the fourth hospital day the venous pressure in the right arm was 175 mm. of water. She vomited twice that afternoon, but physical examination and fluoroscopic studies revealed no changes except slight cyanosis of the lips, a gallop rhythm and a paradoxical element in the systolic blood pressure reading. At 6 o'clock in the morning of the sixth hospital day the intern was called to the ward because the patient was saying that she felt she might die. She seemed excited and anxious but had no specific complaint and there was no apparent change in her condition except for a rapid pulse and slight

perspiration. An hour later the patient suddenly stopped breathing.

Discussion

It seems obvious that we are dealing with a case of scleroderma in which symptoms and signs of cardiovascular abnormality began to appear some two or three months before death. While we know little about the pathogenesis of scleroderma, and although some cases may reverse spontaneously or with supportive treatment, experience indicates that the disease is chronically progressive and ultimately fatal in such instances as this. It appears that those who observed this patient had no idea that she was a candidate for sudden death, and it is difficult to relate the disease, scleroderma, to any condition we think of as likely to produce sudden death.

Although the levels of calcium and phosphorus in the blood are almost always normal in scleroderma, there is a marked tendency to disturbance of the calcium metabolism in the form of deposits of calcium in the skin. Experimentally, injections of parathyroid extract will produce lesions in rats very similar to scleroderma, and there is other evidence to relate calcium metabolism to a group of rare diseases characterized by vascular disturbance in the skin. Some human cases of scleroderma seem to have been benefited by partial ablation of the parathyroid. I do not think this evidence is suggestive enough to attribute sudden death to a severe disturbance of the calcium metabolism.

The vascular changes described in the extremities are so commonly a part of the picture of scleroderma that we cannot regard them as indications of any other type of peripheral vascular disease. It seems, then, that this problem falls into two sections: scleroderma starting three years ago and progressing, and something else, suggestively cardiac, which started two or three months before admission to the hospital and which is not ordinarily a feature of the sclerodermatous process. The latter portion appears to have been responsible for the sudden death and to be the most important to us. May we have the electrocardiographic and x-ray reports?

DR. GEORGE BAYLIN (describing the x-ray film): There is some increase in peribronchial thickening in the right lung field. The left lung is almost completely obscured by marked enlargement of the cardiac shadow,

which reaches to the left lateral chest wall. The left costophrenic angle is clear. Fluoroscopically, the cardiac pulsations were very feeble.

DR. GEORGE HARRELL: The electrocardiogram was essentially normal except for a rapid rate, inversion of T_3 , and definite predominance of the dextrogram.

DR. PERSONS: Although the x-ray appearance suggested cardiac enlargement to the left, and the history of paroxysms of nocturnal dyspnea and symptoms of constriction of the chest on exertion suggest the gradual development of left ventricular failure, the finding of predominance of the dextrogram requires that this idea be revised. This electrocardiographic finding, together with the history of normal blood pressure and the absence of evidences of valvular disease, means, to me, that we cannot incriminate the left ventricle as the cause of the progressive cardiac disability.

The possibility of pericardial effusion must be considered, but paradoxical respiratory changes in the systolic blood pressure readings are likely to occur with marked cardiac enlargement as well as with pericardial effusion. The clinical picture does not seem to be that of cardiac tamponade, and the physical finding of a heaving precordial impulse is very much against the presence of an effusion of any size. Also, we would expect leukocytosis with fever in a rheumatic or pyogenic pericarditis, and we have no real reason to consider tuberculous pericarditis.

This brings us to a consideration of conditions in which the strain is on the right ventricle. One thinks first of chronic pulmonary disease, with fibrotic changes which impede the flow of blood. We have no real evidence of any chronic lung lesion, and cyanosis was noted only shortly before death. Lacking evidence of a pulmonary cause for strain on the right ventricle we must consider the congenital malformations of the heart which produce such a load. There is only one of these in which there may be a defect large enough so that no significant cardiac murmur can be heard and yet at the same time cyanosis is not a constant feature. This is a defect in the interauricular septum. One-third to one-half of such cases have no significant cardiac murmur and do not have cyanosis until relatively late in life, when the heart is failing and a shunt, with cyanosis and paroxysms of dyspnea, occurs. This diagnosis is flimsy because it depends on

negative evidence, but I see no positive indication of the cause of right-sided heart failure in this case.

Clinical Diagnosis

Scleroderma.

Interauricular septal defect?

Right-sided heart failure.

DR. CHRISTOPHER JOHNSTON: I agree that this is the picture of right-sided heart failure, and should like to suggest another possibility—primary sclerosis of the pulmonary arterial system, or Ayerza's disease, which imposes a burden on the right side of the heart.

DR. PERSONS: It has been my impression that cyanosis is a prominent feature throughout the course of Ayerza's disease.

Pathological Findings

DR. DAVID W. GODDARD: Externally, the generalized skin changes described were not nearly so striking in death. There was extreme cyanosis of the nailbeds, and the distal skin of the fingers had a tight, shiny, drawn appearance.

The heart was greatly enlarged, weighing 400 Gm., the increase in size being almost entirely in the right side. The ventricle was markedly dilated and hypertrophied, and the right auricle was dilated and contained a mural thrombus. This evidence of right-sided failure explained the finding of considerable amounts of fluid in the pleural, pericardial, and peritoneal cavities and of chronic passive congestion of the liver and spleen.

The heart showed no other gross changes. The lungs were congested in some areas, but no pneumonia could be seen; and although there were some atherosclerotic patches in the larger branches of the pulmonary artery, we could not, in the gross, make out anything adequate to put a strain on the right side of the heart. Insignificant evidence of healed pulmonary tuberculosis at the left apex was present. Gross examination of the remaining organs revealed nothing of significance except for the congestive phenomena previously described.

It is in the microscopic sections that one finds at least a partial explanation of the situation. The epithelium of the skin is moderately thin but quite orderly in structure, and the changes are in the corium, which seems to be composed of fairly homo-

geneous, dense scar tissue interrupted only occasionally by accessory skin structures. About these structures there are accumulations of inflammatory cells which are principally of the lymphocytic variety. This is the histological picture of scleroderma.

In the arteries of the skin and in the small arteries of the lungs, heart, and pancreas one finds the most unusual alterations. These consist of a marked intimal proliferation—sclerosis—which in many instances has proceeded so far as to block completely the blood flow through these vessels. Special stains indicate that almost no medial hypertrophy has occurred, and we have not been able to demonstrate any fat in the intima. These changes are relatively old in comparison with other vascular changes to be described, and it would seem that they could account for the changes in the corium, some change in the heart muscle, and, perhaps, for a pancreatic steatorrhea.

In the larger branches of the pulmonary artery and in the aorta and iliac arteries there are marked inflammatory changes of a focal nature, with moderate proliferation of the intima and the accumulation of large macrophages, lymphocytes, and eosinophils. Nowhere do we see any bacteria which might be responsible for any of these changes. The process is relatively newer than that in the smaller vessels which has been described, and might account for a recent increase in the severity of circulatory disturbances.

In the lung tissue, a great many alveoli contain considerable numbers of macrophages and proliferated epithelial cells. Many of these macrophages are loaded with fat; a few contain iron pigments. Collections of lymphocytes are seen in many places, and occasional bronchi contain both large and small mononuclear cells. This pneumonia is accompanied by scarring which is particularly pronounced in the pleurae and the septa which run from the pleurae to the hila. The picture is typical of what has been called chronic interstitial mononuclear pneumonia. There is no microscopic evidence of any active tuberculosis.

Microscopic study of the kidney revealed a number of small glomerular hemorrhages but no significant arteriolar changes. Sections of the other organs revealed nothing of significance.

In summary, the cause of death seems to be right-sided heart failure secondary to

changes in the heart muscle and to marked obstruction of the pulmonary circulation by extensive inflammatory changes in the pulmonary arteries. The sclerodermatous changes in the skin are probably the result of an impaired blood supply due to similar inflammatory changes in the skin vessels.

There are many conceivable causes for such diffuse arterial and arteriolar inflammation, of which at least two must be considered in this case. There is a history of marked oral sepsis, and we have evidence of a chronic interstitial mononuclear pneumonia which may be of long duration.

In closing, then, we regard this case now as one in which some agent produced generalized vascular disease of an inflammatory nature which, in the skin, produced the changes of scleroderma, and which in the lungs produced an Ayerza's syndrome, with eventual death due to right-sided heart failure.

Pathological Diagnosis

Inflammatory intimal proliferation of pulmonary, cardiac, pancreatic, and cutaneous arteries and arterioles.

Scleroderma.

Chronic interstitial mononuclear pneumonia.

Cor pulmonale.

The Surgical Dyspepsias

The necessity for expert roentgenological examination and closer cooperation of the profession in the study of diseases of the gastro-intestinal tract is stressed by A. L. Lockwood, M.D. of Toronto, in *The Journal of the Michigan State Medical Society* for August, 1941.

Esophageal diverticula and cardiospasm and even esophageal carcinoma are still overlooked in spite of their very suggestive symptomatology.

Operative measures for the cure of atresia at the cardia except for relief in the sigmoid type of cardiospasm are unnecessary, and advised against.

Diaphragmatic hernia, overlooked until recent years, is now being diagnosed in ever increasing numbers. Surgical technique for its cure has been well established and the results are highly satisfactory.

Lesions of the intestinal tract from the pylorus to the splenic flexure may cause so-called dyspepsia as a result of pylorospasm, in an effort to prevent food passing through the pylorus into the bowel.

Apart from lesions of the stomach and duodenum, diseases of the gallbladder, pancreas and appendix, hernias, Meckel's diverticulum and tumors and cysts within the abdomen must all be considered in the recognition of the causes of "Surgical Dyspepsia".

CLINICO-PATHOLOGICAL
CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

F. S., a colored female 41 years of age, married, entered the hospital on April 7, 1941, with the chief complaint of abdominal pain, nausea and vomiting.

The patient's illness began suddenly on April 3, with a chill, elevation of temperature, and pain beginning in the left flank and radiating to the lower abdomen and then to the epigastric region. The pain had been practically constant since the onset. The patient began menstruating on March 1 and continued to bleed for twenty days. The bleeding then stopped for three days and started again, continuing to the time of admission. All her previous periods had been regular, although the last four had been increasingly painful. The patient had had similar, less severe attacks of abdominal pain during the past four weeks. The past and family histories were non-contributory.

Physical examination revealed an acutely ill, well developed colored female with beads of perspiration on her forehead and grunting respirations. The skin was warm and moist. An arcus senilis was present. The heart sounds were distant. The pulse was 132, the blood pressure 84 systolic and 40 diastolic, and the respirations 36. The breath sounds were absent in the right base, and there was also slight dullness in this region. The abdomen was markedly distended and exquisitely tender over an area extending from just above the umbilicus to the symphysis, and well into both flanks. The maximum tenderness was over the protruding umbilicus. There was dullness to percussion over this entire tender area, and tympany above. There was marked muscle spasm, but there was also the feeling of a large mass in the dull area which was not movable. No fluid wave was detected. There was no tenderness in the loins and no peristalsis was heard. Pelvic examination revealed bright red blood in the vagina. The cervix was small, high, soft, dilated sufficiently to admit one finger and almost "flush" with the vaginal walls. The fundus could not be palpated. There was no fullness in the cul-de-sac. A mass seemed to lie above the pelvic brim, but could not be definitely outlined because of the tenderness and rigidity.

The laboratory work on admission showed 4,020,000 red cells and 10.6 Gm. of hemoglobin. There were 7,200 white cells, with 5 per cent juveniles, 11 per cent stabs, 59 per cent segmented cells, 22 per cent lymphocytes and 3 per cent monocytes. The urine was negative except for 1 plus albumin, 9 to 12 white cells per high power field, and coarse granular casts. Glucose was immediately given. The next morning the patient seemed somewhat brighter and had less pain. The abdominal distention was the same, but the blood pressure was now 110 systolic and 60 diastolic and the white count was practically the same as on admission. On April 10 the patient was very uncomfortable and the abdomen markedly distended. Enemas and prostigmin produced poor results. The temperature at this time was 101 F. rectally, the pulse 100, and the blood pressure 100 systolic and 60 diastolic. On April 11 there was no improvement. The patient passed a small stool and some flatus. The blood pressure was 84 systolic and 60 diastolic, the abdomen much more distended, and the respirations much more labored. The temperature was over 108 with three thermometers. The red count on this day was 3,760,000, the hemoglobin 11 Gm., the white cell count 12,700 with 8 per cent juveniles, 10 per cent stabs, 52 per cent segmented cells, 21 per cent lymphocytes and 8 per cent monocytes. An x-ray on April 8 showed no definite evidence of intestinal obstruction aside from one dilated loop of bowel in the upper left quadrant. The patient died at 9:15 a. m. on April 12, after a rapid downhill course.

Discussion

DR. H. M. STARLING: Since this patient was a colored female with the complaint of pains in the lower abdomen, one would think immediately of pelvic inflammatory disease, even though it is less common at the age of 41 than in the younger group. She obviously had some acute pyogenic infection, as evidenced by the illness beginning with a sudden elevation of temperature, nausea and vomiting, and a chill. The symptom of prolonged menstrual bleeding would be in keeping with some sort of pelvic pathology—perhaps pelvic inflammatory disease, and possibly malignancy. In any woman past 40 years of age who has an abnormally prolonged period of vaginal bleeding the possibility of

malignancy should always be considered. Malignancy of the cervix can be pretty definitely ruled out by the findings on the pelvic examination. The possibility of carcinoma of the fundus remains. It seems to me that she would have been more anemic and would have had a history of a more prolonged illness if she had had a carcinoma of the fundus which was sufficiently extrinsic to give an invasion of the peritoneal cavity; and an invasion of the peritoneal cavity would necessarily have to be present to produce the abdominal symptoms of which this patient complained.

The patient obviously had peritonitis, and, as said before, the most frequent cause of pelvic peritonitis in the colored female is salpingitis. My only reason for doubting that this was the causative factor of death is that it is unusual to see a patient of this age with a pelvic infection so virulent as to cause peritonitis and death.

There was dullness in the base of the right lung, with an absence of breath sounds and grunting respirations. These symptoms, together with a chill and fever, would lead one to think of the possibility of pneumonia. This can be ruled out, I think, by the fact that had pneumonia been present, there would be coughing and an increase in the breath sounds, with bronchovesicular or tubular breathing and rales instead of absent breath sounds.

There are two other conditions that present themselves as possible causes of death in this patient—namely, (1) carcinoma of the sigmoid, and (2) diverticulitis of the left colon or sigmoid.

A carcinoma of the sigmoid or left colon which had ulcerated and perforated to give peritonitis could account for this patient's condition. In patients past 40 who have signs of intestinal obstruction—and this patient had such signs, although they were signs of paralytic obstruction—the possibility of carcinoma of the large bowel must be considered.

Diverticulitis of the large bowel, which is known as "left-sided appendicitis", with a perforation of a diverticulum and subsequent peritonitis could account for this patient's death.

I am uncertain as to the cause of this patient's death. I believe, after considering the aforementioned possibilities, that the most

probable cause of death is peritonitis resulting from a perforated diverticulum.

DR. J. F. MARSHALL: I saw this patient in the hospital. Her abdomen was very much distended the whole time and was very tense with abnormal signs throughout the entire illness. The area of increased density was over the umbilical hernia, and gave the impression of a mass extending up to the umbilicus and out to the flank. This mass was dull. The cervix was dilated enough to admit one finger and was flush with the vaginal wall. Rectal examination did not show anything except that she had peritonitis and pelvic pain. I suggested a twisted ovarian cyst with peritonitis that developed suddenly.

Clinical Diagnosis

Ovarian cyst with twisted pedicle
Peritonitis.

Dr. Starling's Diagnosis

Peritonitis resulting from perforated diverticulum.

Anatomical Diagnosis

Multiple fibromyomata of the uterus with pressure necrosis of endometrium.
Subacute salpingitis, bilateral.
Ovarian abscess, left.
Generalized peritonitis.
Fibroma of right ovary.

Pathological Findings

DR. T. T. FROST: At autopsy the mass turned out to be multiple fibromyomata of the uterus, which was firmly lodged in the pelvis. One of the fibromyomata projected into the endometrial cavity, and there was a small area of erosion and hemorrhage in the endometrium which accounted for the vaginal bleeding. There was a subacute salpingitis involving both tubes, and an abscess in the left ovary which had ruptured and resulted in a generalized peritonitis. The sudden pain and acute onset were due to the rupture of the ovarian abscess into the peritoneal cavity.

Fractures of the Spine.—Fractures of the spine are fairly common, and may result from seemingly trivial injuries. The so-called crush fracture of the spine is the one referred to, and is the one often missed. Indeed it may be missed by early x-ray, but a later picture when bone production takes place will reveal the injury. There may be no pain in these cases for several weeks when the healing bone becomes more sensitive. Insured patients have had early small settlements to their sorrow and financial loss.—Frank R. Ober, M.D.: *Lame Back*, J. M. Soc. State of New Jersey, 37:504 (October) 1940.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Raleigh

Insane persons. Contracts of persons non compos mentis may be valid, void or voidable.

According to law a contract entered into by a person who is mentally incompetent is not void, but is voidable at the election of the incompetent upon the return by him of the consideration and the restoration of the status quo, and under certain circumstances may be voided even though the incompetent is unable to place the other party in statu quo.

There are, however, two notable exceptions to the above rule: First, contracts for necessities such as food, clothing and other articles useful in maintaining the incompetent person in his usual station in life are valid. Second, contracts entered into by persons non compos mentis who have been judicially declared insane on inquisition and placed under guardianship are absolutely void.

The following case illustrative of the voidable contract was recently decided before the North Carolina Supreme Court: On April 18, 1935, a person of unsound mind, the plaintiff in the case, entered into a contract with another person for the exchange of boats, under the terms of which the plaintiff delivered his boat and \$500 boot money to the defendant in exchange for the defendant's boat. According to the findings, the plaintiff was adjudged to be a lunatic for the purpose of hospitalization and was committed to the State Hospital for the Insane on February 6, 1913, where he remained until April 14, 1914. On July 21, 1914, he was again adjudged insane and was returned, remaining in the hospital until 1918. On July 20, 1935, after making the contract, the patient was adjudged incompetent to handle his business affairs and a guardian was duly appointed. On February 4, 1936, the plaintiff through his guardian instituted this action to annul the contract entered into on April 18, 1935. When the case came on for trial in the Superior Court the jury found as follows: First, that the plaintiff and defendant contracted for the exchange of boats, as alleged in the complaint. Second, that on the date of making the said trade the plaintiff did not possess sufficient mental capacity to attend to his own business. Third, that the defendant had no knowledge of such mental condition on the part of the plaintiff. Fourth, that the value of the plaintiff's boat on the date of contract was \$250. Fifth, that the value of the defendant's boat on the date of contract was \$400. The Superior Court entered judgment dismissing the action. Thereupon the plaintiff excepted and appealed.

When the case was considered on appeal, the Supreme Court, although the incompetent was unable to place the defendant in statu quo, ordered the contract rescinded because of the fact that undue advantage was taken of the insane party. The following remarks were made by the Justice who wrote the decision: "It is admitted that plaintiff paid \$500.00 boot money. In addition, on the findings of the jury, he delivered to the plaintiff a boat worth \$250.00, in return for which he received a boat of the value of \$400.00. Thus, for the property of the value of \$400.00, he paid, in money and property, \$750.00. These facts fail to show no unfair advantage was taken and fall short of establishing a fair and full consideration. They are not sufficient to rebut the presumption of invalidity which arises upon proof of insanity." The Supreme

Court ordered the contract annulled and the judgment entered for the plaintiff.

From the above case it may be seen that the law is very strict in its protection of persons non compos mentis; however, if the contract is entered into with no knowledge of the infirmity and if no advantage is taken of the incompetent person the public in general is also assured protection. (North Carolina Supreme Court, Book 219, p. 214).

BULLETIN BOARD

PRESIDENT'S MESSAGE

In the near future the Auxiliary to the Medical Society of the State of North Carolina will make a vigorous effort to increase its membership. At present they are organized in only eleven counties, and in some of these the membership is far too small.

There is a tremendous lot that these good women can do toward molding public opinion, creating favorable sentiment and carrying on other desirable activities.

As this matter is brought to the attention of each County Society, I trust it will receive careful consideration and hearty endorsement.

F. WEBB GRIFFITH, M.D.

SECRETARY'S MESSAGE

Do you know that two-thirds of the accidents at highway-railroad grade crossings in 1940 took place when weather conditions were described as "Clear"?

Do you know that thirty-five per cent of the total number of accidents involving motor vehicles at highway-grade crossings in 1940 resulted from motor vehicles running into the side of trains?

This was due to carelessness.

Do you know that there are still some physicians who have not paid their 1941 dues?

This is just an oversight. (?)

We are entering the last lap of the year and I am eager to close the year with the largest paid-up membership so far. Please, Mr. County Secretary, get busy, look over your books, count 'em up. Go after these fellows.

I remember seeing somewhere these words of wisdom:

"Without gun and ammunition it is useless to have an aim in life."

I have the gun and ammunition as well as the aim, and pretty soon these fellows will be hearing from me. My aim is to collect the 1941 dues.

ROSCOE D. McMILLAN, M.D.

DUKE SYMPOSIUM

Six thousand doctors in the South Atlantic area have been invited by Duke University School of Medicine and Duke Hospital to attend a Symposium on Problems of Civil and Military Emergencies on October 16, 17, and 18 in the Page Auditorium on the West Duke Campus. The following program has been arranged.

Thursday, October 16, 1941

- 11:30 a. m. Dr. George J. Heuer, New York.
Regular Surgical Clinic, Amphitheatre,
Duke Hospital.
- 2:00 p. m. Dr. John Scudder, New York.
Advances in the Treatment of Shock.
Its Early Recognition and Treatment
with Plasma and Extracts.
- 3:00 p. m. Dr. J. E. M. Thomson, Lincoln, Ne-
braska.
Advances in the Treatment of Fractures
of the Extremities.
- 4:00 p. m. Dr. Harry Stack Sullivan, Washington,
D. C.
Traumatic Neuroses.
- 8:00 p. m. Dr. Lewis H. Weed, Washington, D. C.
Medical Research in Relation to the
Emergency.
- 8:50 p. m. Dr. George J. Heuer, New York.
Fundamental Principles of the Manage-
ment of Wounds.

Friday, October 17, 1941

- 9:00 a. m. Dr. John F. Fulton, New Haven, Con-
necticut.
Neurological Advances in the Present
War.
- 9:45 a. m. Dr. Philip D. Wilson, New York.
Experiences in the Treatment of
Wounds in the Present War.
- 10:30 a. m. Dr. Frank D. Dickson, Kansas City,
Missouri.
The Local Use of the Sulfonamides in
Wounds.
- 11:15 a. m. Dr. Wilder G. Penfield, Montreal, Cana-
da.
Neuro-surgery During Recent Months
in the London Area.
- 2:00 p. m. Dr. Thomas T. Mackie, New York.
Nutrition Problems During Crises and
Food Shortage.
- 3:00 p. m. Dr. Alvin L. Barach, New York.
Clinical Use of Oxygen.
- 4:00 p. m. Dr. George E. Bennett, Baltimore,
Maryland.
Recent Advances in Traumatic Surgery
and Our Preparation for Their Use
in Wartime.
- 8:00 p. m. Dinner—Hope Valley Country Club.

Saturday, October 18, 1941

- 9:30 a. m. Captain Charles S. Stephenson, Wash-
ington, D. C.
Public Health Problems in Civil and
Wartime Emergencies (Prophylaxis
Immunization, etc.)
- 10:15 a. m. Dr. Russell L. Cecil, New York.
Treatment of Influenza and Respiratory
Epidemics.
- 2:00 p. m. Colgate-Duke Football Game.

All doctors attending the Symposium are especial-
ly urged to come to the buffet dinner on Friday
evening in order that they may meet the speakers.
A charge of \$1.25 will be made.

The Symposium committee consists of Dr. Lenox
D. Baker, Chairman; Dr. Elbert L. Persons, Dr. Ran-
dolph Jones, Jr., and Dr. Richard S. Lyman.

NEWS NOTES FROM THE NORTH CAROLINA
TUBERCULOSIS ASSOCIATION

The Southern Tuberculosis Conference will be held
in Asheville September 15, 16, and 17. A splendid
program has been arranged, giving both the medi-
cal and non-medical persons a great deal of oppor-
tunity to learn the latest techniques and develop-
ments in their respective fields. States represented
in the Southern Conference are Alabama, Arkansas,
District of Columbia, Florida, Georgia, Kentucky,
Louisiana, Maryland, Mississippi, North Carolina,
Oklahoma, South Carolina, Tennessee, Texas, and
Virginia.

NEWS NOTES FROM THE STATE BOARD
OF HEALTH

Officials of eight North Carolina counties, in co-
operation with State officials, army officers and
representatives of the United States Public Health
Service, are engaged in the task of making that
area, where army maneuvers are to take place this
fall, safe for civilians and soldiers, during the
largest military operations ever undertaken in this
country, in war or peace.

The area will include Anson, Hoke, Montgomery,
Moore, Richmond, Scotland, Stanly and Union.

The problems of preparation involve many factors,
chief among which are those incident to health—
including sanitation—transportation, and law en-
forcement.

In order that there may be concerted action on
the part of local officials in the counties involved,
who are working in cooperation with State and
Federal forces, Governor J. Melville Broughton
called a conference, which was held in the hall of
the House of Representatives in Raleigh.

* * *

With fifty already arrested, at least a dozen now
in the State detention camp near Raleigh, with
more sentenced and others to follow, prostitutes, in
an effort to escape the toils of the law and con-
tinue their traffic, are leaving Cumberland County
and taking up their abode in adjoining counties, Dr.
Carl V. Reynolds has announced.

"We wish to emphasize that it is the duty and
responsibility of law enforcement officials of the
counties into which these women have moved to see
that they are arrested and that our soldiers and
civilians are protected. This duty should be ac-
cepted and executed and the women sentenced to
the State detention camp. We are out to protect
our soldiers, our sons and our daughters, and we
intend to see to it that 'the way of the transgressor
is hard.'"

"We are working under a State law that applies
as much to one county as another, and we intend
to have this law follow these women just as long
as they remain in North Carolina, with the support
of the Federal government under the terms of the
May Resolution making prostitution, or aiding and
abetting in prostitution, punishable by a \$1,000 fine,
a year's imprisonment, or both.

"Statistics show that from 90 to 97 per cent of
prostitutes are infected with venereal diseases, and
we no longer depend on Wassermann or other ordi-
nary tests to determine their infectiousness. Ten
per cent of those with the disease and under treat-
ment are Wassermann negative; 23 per cent are
Wassermann fast, and the remaining two-thirds are
'paradoxical.' Hence, it is absolutely necessary that
we treat the once diagnosed patient until he or she
is cured, independent of laboratory findings."

With the present Indian population of North Carolina conservatively estimated at 20,000, it was found that the Indian birth rate in this state is approximately 40 per 1,000 population, as compared with a general birth rate of 22.3, the white rate being 21.4 and the Negro rate 24.2. Add to this the fact that their death rate appeared to be only 8.4, as compared with a general death rate of 9.0, and it is readily seen that the Indian race is not "dying out," as many suppose.

In 1939, for which the State Board of Health's Vital Statistics Division has issued a printed report giving complete data on births and deaths among all races, together with mortality causes, by age, etc., there were 803 Indian babies born in North Carolina, while the total number of deaths among members of that race was 168.

Diseases of the heart claimed the heaviest toll among Indians, even as they do among Caucasians and Negroes, with 23 out of the 168 total. Twenty-one died of nephritis; 14 of pneumonia, 11 of cerebral hemorrhage, cerebral embolism and thrombosis, and 7 of tuberculosis in all forms. Whooping cough claimed 2, influenza, 3; syphilis, 3; cancer 4; diabetes mellitus, 1; pellagra, 2; diarrhea and enteritis among children under two years of age, 6; appendicitis, 1; cirrhosis of the liver, 1; homicide, 4.

There were no deaths among Indians resulting from typhoid fever that year. None died of smallpox, measles, scarlet fever or diphtheria. Neither did any die of malaria, dysentery, poliomyelitis or meningitis.

Not one Indian committed suicide, and none died of acute or chronic alcoholism.

FOURTH DISTRICT MEDICAL SOCIETY

The Fourth District Medical Society met at the Rick's Hotel in Rocky Mount Wednesday, August 13, 1941, with Dr. W. G. Wilson presiding.

Dr. J. G. Raby, President of the Edgecombe-Nash County Medical Society, welcomed the Fourth District Society as guests. Dr. Raby made a motion which was duly seconded and passed that resolutions of respect on the death of Dr. W. B. Kinlaw be drawn up by the Edgecombe-Nash County Medical Society as a permanent record of same and of the Fourth District Medical Society.

Dr. J. G. Smith of Rocky Mount, presented a paper on "Diaphragmatic Hernia". He gave case reports with x-ray plates demonstrating cases. His paper was discussed by Drs. Bunn, Howard, Boice, Cobb and Willis.

There being no further business, the meeting adjourned.

The next regular meeting is to be held in Goldsboro in November.

BUNCOMBE COUNTY MEDICAL SOCIETY

The Buncombe County Medical Library has recently moved to larger and better quarters in the Arcade Building, Asheville.

The Library was organized in 1935 by a small group in the County Society headed by Dr. Julian Moore. For several years it was supported by voluntary contributions of money, books and journals. Early in 1941 it was taken over by the County Society which voted to increase its dues so that all members could benefit from the Library.

At present the Library contains 700 monographs, 2500 bound volumes of journals, and receives 63 journals on subscription and by donation.

On Monday, August 4, the Buncombe County Medical Society were the guests of Southern Dairies and of the Staff of Aston Park Hospital. The meeting was held in the Southern Dairies Hostess Room, and the program was presented by the Program Committee of Aston Park Hospital. Refreshments followed the meeting. On August 18, before a meeting in the Council Chambers of the City Hall, Dr. B. H. Hartman spoke on "Abdominal Pain in Children". The discussion was opened by Dr. J. LaBruce Ward and Dr. L. W. Elias.

A city blood plasma bank is being set up in Asheville by the Buncombe County Medical Society, the five Asheville hospitals, and the city health department. The hospitals will supply the necessary laboratory equipment, the health department will do the laboratory work, and a committee from the medical society will be in charge of the project. Dr. G. Farrar Parker is head of the committee.

CIVILIAN DEFENSE

The U. S. Director of Civilian Defense has appointed the following Medical Advisory Board to assist the Medical Division of the Office of Civilian Defense:

Dr. George Baehr, New York, Chairman
Dr. Robin C. Buerki, Madison, Wisconsin
Dr. Elliott Cutler, Boston, Massachusetts
Dr. Oliver Kiel, Wichita Falls, Texas
Dr. Albert McCown, Washington, D. C.
Dr. Fred Rankin, Lexington, Kentucky

The U. S. Director of Civilian Defense, Mayor F. H. LaGuardia, announced the training of 100,000 Volunteer Nurses' Aides during the next twelve months, in collaboration with the American National Red Cross and the major hospitals of the country. The program is in preparation for a great expansion in hospital beds which may be required during the National Emergency, at a time when the already overburdened nursing facilities of civilian hospitals are seriously depleted, owing to the demands of our military and naval establishments and the increasing needs of public health and industrial hygiene services.

The curriculum of instruction has been prepared by the Medical Division of the Office of Civilian Defense, the American National Red Cross and the Federal Security Agency. Eligibility is limited to women between the ages of 18 and 50 who have had at least a high school education or its equivalent and who are physically fit. The course will provide eighty hours of intensive instruction in a period of seven weeks. The first half of the course will be given in the local Red Cross chapter house in collaboration with local hospitals and nursing organizations. This will constitute the probationary period and will require two hours of instruction daily on five days a week for four weeks.

The second half of the course will consist of supervised practice in a hospital which has been designated by the Office of Civilian Defense and the Red Cross as a Training Center. The American National Red Cross will assist the hospital to provide competent instructors and nursing supervisors.

Volunteer Nurses' Aides will wear the uniforms and insignia of Civilian Defense. The new insignia for Nurses' Aides will be a red cross within the triangle and circle of the OCD, indicating that the Aide was enrolled and trained by the Red Cross to serve in Civilian Defense.

Applicants may enroll at the Red Cross chapter house and the courses will begin in each locality as hospital arrangements are completed.

REGIONAL MEETING OF THE AMERICAN COLLEGE OF PHYSICIANS

The annual regional meeting of the American College of Physicians will be held in Chapel Hill on October 31 and November 1. On Friday afternoon a symposium on gastro-enterology will be held by local members of the College. Following the dinner on Friday, there will be a guest speaker. The Saturday morning program will again be in the hands of local members, who will present papers on various subjects.

ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

The forty-sixth annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held at the Palmer House, Chicago, October 19-23, under the presidency of Dr. Frank R. Spencer, Boulder, Colorado.

The academy's program consists of one general scientific meeting on the morning of the first day, separate programs for the two specialties on alternate afternoons, and instructional courses every morning beginning on Tuesday.

The feature of this year's general opening meeting will be a symposium on vertigo, with Dr. Francis H. Adler, Philadelphia, representing ophthalmology; Dr. William J. McNally, Montreal, otolaryngology, and Dr. Bernard Alpers, Philadelphia, neurology.

FOURTH ANNUAL FORUM ON ALLERGY

The Fourth Annual Forum on Allergy will be held in Detroit, Michigan, on January 10 and 11, 1942.

SECOND AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY

The arrangements for the Second American Congress on Obstetrics and Gynecology to be held in St. Louis, Missouri, from April 6-10, 1942, are progressing according to schedule. The program contemplates meetings of individual sections, of combined sessions and of general sessions. Round table or panel discussions will be held by those sections which desire them. There will be evening sessions for the laity as well as for the members. Probably two evenings will be assigned to each type of meeting. The subjects and speakers will be announced later.

NEWS NOTES

A son, Wayne Torquil, born to Dr. John P. U. McLeod of Marshville on August 3, died of idiopathic jaundice on August 7.

The Physicians Casualty Association of America has made a reduction in the \$25.00 per week accident and health insurance, of \$1.00 per year; in the \$50.00 per week accident and health insurance, of \$2.00 per year and in the \$75.00 per week accident and health insurance, of \$3.00 per year.

BOOK REVIEWS

Essentials of Endocrinology. By Arthur Grollman, Ph. D., M.D., Research Professor of Medicine, Bowman Gray School of Medicine of Wake Forest College; formerly Associate Professor of Pharmacology and Experimental Therapeutics, Medical School of the Johns Hopkins University.

This book should be of especial interest to North Carolina doctors, since its author has recently come from Johns Hopkins to become Research Professor of Medicine in the Bowman Gray School of Medicine of Wake Forest College. Aside from this personal reason, however, it should be of interest because it presents clearly and accurately present day knowledge of the field of endocrinology. Dr. Grollman is recognized as an authority on this subject; hence one may be assured of the reliability of the information contained in this work. It appealed to this reviewer as a valuable antidote to the over-enthusiastic claims of the detail men, who would have us believe that by endocrine therapy we can cure all the ills the human flesh is heir to. Dr. Grollman recognizes the increasing importance of endocrinology, and gives in detail its clinical application to various conditions; but he writes with the healthy skepticism of the man who is thoroughly familiar with its limitations as well as its possibilities. This book debunks many of the theories advanced about the internal secretions and their use in medicine. To cite one example, in discussing the sexual precocity associated with tumors of the pineal gland, Dr. Grollman says that these changes "must be looked upon as resulting from pressure on contiguous brain structures rather than . . . oversecretion of a pineal hormone or any deficiency of a hormone."

This book can be unreservedly recommended to any doctor who wishes to become familiar with the latest knowledge of the endocrine system. It is an excellent introduction of Dr. Arthur Grollman to North Carolina doctors.

Abdominal Surgery of Infancy and Childhood. By William E. Ladd, M.D., F.A.C.S., William E. Ladd Professor of Child Surgery at Harvard Medical School, and Robert E. Gross, M.D., Associate in Surgery, the Harvard Medical School; Associate Visiting Surgeon, The Children's Hospital. 455 pages with 268 illustrations. Philadelphia and London: W. B. Saunders Company, 1941. Price \$10.00.

This is an excellent book for any student of abdominal surgery. Emphasis has been placed on the care of the patient before and after operation, rather than on technical operative procedures, although the latter are stated in a clear and concise manner. The main advances in pediatric surgery have been due to the strict attention being given to fluid, electrolyte and protein disturbances, and Drs. Ladd and Gross have repeatedly shown this in their statistics on mortality. The discussion of embryological abnormalities is the clearest of any the reviewer has had the privilege of reading. Throughout the whole book the authors emphasize gentleness in examination and gentleness in operating, and stress the disturbed physiology of the patient. Any thoughtful surgeon will realize the importance of these points.

PROCEEDINGS OF THE
THIRTY-FIRST ANNUAL MEETING OF THE
North Carolina Public Health Association
PINEHURST, MAY 19-21, 1941

Monday Morning Session
May 19

The North Carolina Public Health Association convened for the opening session of its Thirty-First Annual Meeting in the ballroom of the Carolina Hotel, at 10 a. m., with the President, Dr. J. W. Williams, Health Officer of Martin County, presiding.

President Williams: The Thirty-First Annual Meeting of the North Carolina Public Health Association will now come to order.

The invocation will be given by the Reverend W. S. Golden, of Carthage.

Rev. W. S. Golden, Carthage: Our gracious Heavenly Father, we thank Thee that we can gather together and consult about measures which vitally concern the welfare of all the people. We realize, our Father, that in all these undertakings we have need of more than human help, and we pray for Thy guidance in all that is done. Grant, our Father, Thy blessing upon our country in this critical hour of its history, and may all that is done be to strengthen and sustain it and to guide it in the ways that are pleasing to Thee. We pray for Thy safe care and protection over all the members of this Association during this visit, and as they shall return after a while to their homes grant that each may be safely kept along the way. Watch over and protect us all, we ask in Christ our Redeemer's name. Amen.

President Williams: Fellow members, all of us know that we are welcome to Moore County, and all of us are always glad to come here. So the formalities of the welcoming address and response will be omitted, and we shall go directly into our scientific program.

The first paper this morning is "Some of the Problems of Antenatal Care in North Carolina", by Dr. A. W. Makepeace, of Chapel Hill.

... Dr. Makepeace then read his prepared paper.

President Williams: The next paper on the program is by Dr. Robert F. Young, on "Public Health Problems Created in Flood Disasters". Dr. Young is in Halifax County, so he is well qualified to speak on this subject.

... Dr. Young presented his prepared paper.

President Williams: I am sure we have all enjoyed and profited by Dr. Young's paper and the discussion.

The next paper on the program is by Dr. John H. Hamilton, of Raleigh, Director of the Division of Laboratories of the State Board of Health, on "The Recent Wassermann Survey Conducted on Draftees".

... Dr. Hamilton presented his prepared paper.

Dr. M. J. Rosenau presented a paper on "Public Health and National Defense".

Mrs. Lewis Raulston, of Greensboro, presented a paper on "The Coordination of Public Health Nursing Services With Other Services in a Generalized Program".

Afternoon Session
Monday, May 19

President J. W. Williams: I am going to ask Dr. Fox to introduce the speaker for the afternoon.

Dr. R. E. Fox: Fellow members of the North Carolina Public Health Association: I feel that the subject that has been announced for this hour is probably the most important from our personal standpoint of anything that may come up at this meeting.

The medical agencies have for a good long while had the merit system principle embodied in a civil service system. The Federal agencies that are contributing funds for public health work in North Carolina have recognized that principle as being the fundamental principle of sound personnel administration for governmental units, and in 1939 the Social Security Act was amended to include certain principles that would be applicable to the state and by their interpretation they were made applicable to the local public health unit personnel, both in welfare work and in public health work.

The Legislature of North Carolina at its recent session enacted a law known as Chapter 378, whereby one merit system council was established and appointed by the Governor. It was necessary to have such a council if we were to continue to receive medical funds for health work in this state, and this council was appointed by the Governor, acting under the authority granted under that law. The merit system council, in turn, appointed a supervisor. You may have read in the program that reached you first that they wanted me to talk about the merit system. I realized that I was not capable of doing any such thing, and I persuaded a much better man than I am—one whose examination I will take one of these days if I continue in my present capacity—to come over and discuss with all of us the merit system for personnel administration in North Carolina, particularly as it affects the local health unit. He is Dr. Frank T. de Vyver, Professor of Economics at Duke University.

We welcome Dr. deVyver, and I am sure we will be glad to hear what he has to say.

... Dr. deVyver spoke on "The Merit System for Personnel Administration in North Carolina".

Monday Evening Session
May 19

President Williams: This is the last general session of our meeting, friends. I will ask Dr. Rodeen to introduce the speaker.

Dr. Rodeen: Dr. Mustard was Professor of Hygiene and Public Health at Johns Hopkins from 1932-1936. While there he organized the Health District of Baltimore, which is a teaching and research district and has been a model for copy far and wide as a result of Dr. Mustard's set-up. Dr. Mustard is now one of the Scientific Directors of the International Health District of the Rockefeller Foundation. He is Director of the Delmar Institute of Public Health at Columbia. He is one of

the editors of the *American Journal of Public Health*. I couldn't begin to tell you all the things he has accomplished. We are to have the pleasure and satisfaction of hearing a message from Dr. H. S. Mustard.

. . . Dr. Mustard spoke on "Relationships in State and Local Public Health Work".

Dr. Williams: Dr. Mustard, we certainly enjoyed that most excellent paper. We will first hear from the nominating committee.

Chairman: Mr. President, the nominating committee wishes to submit the following recommendations:

For President—Dr. R. E. Rhyne, of Gastonia.

For Vice-President — Dr. Thomas Ennett, of Greenville.

For Secretary-Treasurer—Dr. R. J. Sykes, of Raleigh.

. . . Upon motion duly made and seconded, the above officers were unanimously elected.

Dr. Williams: The other committee to report was the committee on retirement, composed of Dr. Hudson, Dr. Hege and Dr. Hardin.

Dr. Hudson: As some of you know, the last session of the Legislature made provision for a retirement fund for teachers and for state employees. They also provided a merit system for the rest of us. A few counties in the state and one or two cities in the state were exempted from the provision which required a vote of the people before a retirement system could be instituted by the county or by the city. Others might have been exempted had some of the health officers and local officials taken more interest in it.

Since we have our merit system, the committee

considers this and proposes this for your consideration:

"RESOLVED: That whereas, we, the public health workers of North Carolina, are now included in the merit system under state supervision and our compensation and appointment is governed by state law and not by local governing bodies;

"THEREFORE, BE IT RESOLVED that we petition the Legislature to include all public health workers in the state retirement system now used for teachers and state employees.

"AND, BE IT FURTHER RESOLVED that a committee be appointed to present this matter to the Legislature."

C. C. Hudson

J. Roy Hege

E. R. Hardin

Committee.

. . . Motion made and seconded and carried to adopt the resolution.

Dr. Williams: I will appoint that committee—Dr. Hudson as Chairman, Dr. Hege and Dr. Hardin, and also Dr. Bulla and Dr. Rhyne.

. . . Committee on time and place continued to make a report later to certain officials and to the Executive Committee.

. . . Dr. M. T. Foster was appointed by Chairman Williams to the Executive Committee, to succeed Dr. R. L. Carlton, whose term expired in 1941.

. . . Dr. Rhyne was escorted to the front and the gavel turned over to him by Dr. Williams.

President Rhyne: Here it is. You asked for it. The Executive Committee has a job on its hands. I want to warn them right now. So far as the policies, I haven't given that a thought, so now, at least, there is no change of policy.

TRANSACTIONS OF THE AUXILIARY

to the Medical Society of the State of North Carolina

NINETEENTH ANNUAL SESSION

Held at Pinehurst, North Carolina, May 19-21, 1941

BOARD OF DIRECTORS 1940-1941

OFFICERS

President.....	Mrs. Clyde R. Hedrick, Lenoir
Chairman of Past Presidents	Mrs. P. P. McCain, Sanatorium
First Vice President (Organization)	Mrs. C. F. Strosnider, Goldsboro
Second Vice President (McCain-Stevens Bed)	Mrs. J. H. McNeill, North Wilkesboro
Third Vice President (Loan Fund)	Mrs. J. S. Hooker, Chapel Hill
N. C. Councilor for Southern Medical Association	Mrs. James Buren Sidbury, Wilmington
Corresponding Secretary.....	Mrs. W. G. Byerly, Lenoir
Treasurer.....	Mrs. E. C. Judd, Raleigh
Recording Secretary	Mrs. J. D. Freeman, Wilmington
President-Elect.....	Mrs. Sidney Smith, Raleigh

ADVISORY BOARD

Dr. Caroline McNairy.....	Lenoir
Dr. C. F. Strosnider.....	Goldsboro
Dr. J. W. Huston.....	Asheville

CHAIRMEN OF STANDING COMMITTEES

Program.....	Mrs. Leslie Lee, Kinston
Research.....	Mrs. R. S. McGeachy, New Bern
Memorial.....	Mrs. Isaac H. Manning, Chapel Hill
Hygeia.....	Mrs. K. B. Pace, Greenville
Press and Publicity	Mrs. Alfred Kent, Jr., Granite Falls
Public Relations	Mrs. W. M. Johnson, Winston-Salem
Scrap Book.....	Mrs. J. R. Terry, Lexington
Historian.....	Mrs. Roy Hege, Winston-Salem
Exhibits.....	Mrs. C. D. Thomas, Sanatorium
Legislature.....	Mrs. Joseph A. Elliott, Charlotte
Jane Todd Crawford Memorial	Mrs. Frederick R. Taylor, High Point

COUNCILORS

First District.....	Mrs. H. D. Walker, Elizabeth City
Second District.....	Mrs. John Winstead, Greenville
Third District.....	Mrs. J. S. Brewer, Roseboro
Fourth District.....	Mrs. M. A. Pittman, Wilson
Fifth District.....	Mrs. W. T. Rainey, Fayetteville
Sixth District.....	Mrs. P. G. Fox, Raleigh
Seventh District.....	Mrs. Harry Winkler, Charlotte
Eighth District.....	Mrs. W. P. Knight, Greensboro
Ninth District.....	Mrs. James W. Vernon, Morganton
Tenth District.....	Mrs. S. M. Bittinger, Black Mountain

BOARD OF DIRECTORS 1941-1942

OFFICERS

President.....	Mrs. Sidney Smith, Raleigh
President-Elect.....	Mrs. R. A. Moore, Winston-Salem
First Vice President.....	Mrs. Clyde R. Hedrick, Lenoir
Second Vice President.....	Mrs. J. R. Terry, Lexington
Third Vice President.....	Mrs. J. S. Hooker, Chapel Hill
Corresponding Secretary.....	Mrs. J. C. Knox, Raleigh
Recording Secretary.....	Mrs. Harry Winkler, Charlotte
Treasurer.....	Mrs. E. C. Judd, Raleigh

CHAIRMEN OF STANDING COMMITTEES

Program.....	Mrs. J. A. Elliott, Charlotte
Public Relations	Mrs. Wingate Johnson, Winston-Salem
Legislative.....	Mrs. J. Buren Sidbury, Wilmington
Press and Publicity.....	Mrs. Verne S. Caviness, Raleigh
Bulletin.....	Mrs. Ben Kendall, Shelby
Hygeia.....	Mrs. W. G. Byerly, Lenoir
Memorial.....	Mrs. Isaac H. Manning, Chapel Hill
Historian.....	Mrs. Roy Hege, Winston-Salem
Defense	
Research	
Exhibits.....	Mrs. Alfred A. Kent, Jr., Granite Falls
Scrap Book	
Jane Todd Crawford Memorial.....	

COUNCILORS

First District	
Second District.....	Mrs. K. B. Pace, Greenville
Third District.....	Mrs. D. M. Royal, Salem
Fourth District.....	Mrs. C. F. Strosnider, Goldsboro
Fifth District.....	Mrs. W. T. Rainey, Fayetteville
Sixth District.....	Mrs. P. G. Fox, Raleigh
Seventh District	
Eighth District.....	Mrs. E. T. Harrison, High Point
Ninth District.....	Mrs. James W. Vernon, Morganton
Tenth District	

PAST PRESIDENTS

1923 (Organizing Chairman)	Mrs. P. P. McCain, Sanatorium
1924.....	Mrs. P. P. McCain, Sanatorium
1925.....	Mrs. I. W. Faison, Charlotte
1926.....	Mrs. J. Howell Way, Waynesville
1927.....	Mrs. R. S. McGeachy, Kinston
1928.....	Mrs. B. J. Lawrence, Raleigh
1929.....	Mrs. A. B. Holmes, Fairmont
1930.....	Mrs. J. H. Macon, Warrenton
1931.....	Mrs. W. B. Murphy, Snow Hill
1932.....	Mrs. R. S. McGeachy, Greenville
1933.....	Mrs. W. P. Knight, Greensboro
1934.....	Mrs. J. W. Huston, Asheville
1935.....	Mrs. J. Buren Sidbury, Wilmington
1936.....	Mrs. C. P. Eldridge, Raleigh
1937.....	Mrs. J. R. Terry, Lexington
1938.....	Mrs. W. T. Rainey, Fayetteville
1939.....	Mrs. Joseph A. Elliott, Charlotte
1940.....	Mrs. C. F. Strosnider, Goldsboro
1941.....	Mrs. Clyde R. Hedrick, Lenoir

PROGRAM

Hostesses—Moore and Hoke County Doctors' Wives

MONDAY, MAY 19

- 3:00 p. m.—Drive to State Sanatorium.
Tea, Mrs. P. P. McCain's residence.
8:30 p. m.—Keno and Bermuda Movie.
10:00 p. m.—Dance, North Carolina Public Health Association.

TUESDAY, MAY 20

- 9:00 a. m.—Executive Board Meeting.
10:30 a. m.—Annual Auxiliary Meeting, Mrs. C. R. Hedrick, President.
Invocation—Mrs. I. H. Manning.
Reports of Officers.
Reports of Committee Chairman.
Memorial Service—Mrs. I. H. Manning.
Address—Dr. Hubert Haywood, President of the Medical Society of the State of North Carolina.
Address—Mrs. V. E. Holcombe, President of the Auxiliary to the American Medical Association.
Election and Installation of New Officers.
4:00 p. m.—Bridge.
9:00 p. m.—President's Reception.
10:00 p. m.—Annual Medical Society Ball.

WEDNESDAY, MAY 21

- 9:30 a. m.—Drive to Orchid Gardens or neighboring antique shop.

MINUTES OF THE EXECUTIVE BOARD OF THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Final Meeting, Tuesday May 20, 1941

The Executive Board of the Auxiliary to the Medical Society of the State of North Carolina met at 9 a. m., Tuesday, May 20, 1941, in the East Parlor of the Carolina Hotel. The president, Mrs. Clyde R. Hedrick, of Lenoir, presided.

The president welcomed the members of the Board, expressing to them her appreciation of the cooperation she had received during her year as president of the Auxiliary to the Medical Society.

Mrs. Hedrick stated that if there were no objections, Mrs. Alfred A. Kent, Jr., Granite Falls, would be appointed secretary pro-tem. No objection was offered.

Roll call by the secretary showed that there were sixteen officers and chairmen of standing committees present.

Telegrams and letters were read from Mrs. Jere D. Freeman, Wilmington, Recording Secretary; Mrs. Ben Kendall, Shelby; and Mrs. J. S. Hooker, Chapel Hill, expressing their regrets at not being able to attend the annual meeting.

Mrs. Hedrick read a letter from Mrs. V. E. Holcombe, President of the Auxiliary to the American Medical Association, presenting a recommendation which a committee from the American Medical Association had introduced. This recommendation was that our state dues to the Auxiliary of the American Medical Association be raised, in order that the working unit of the Auxiliary to the American Medical Association might be put on a basis similar to that of the American Medical Association with permanent headquarters. The question was open for discussion. Mrs. Sidney Smith of Raleigh made a motion that the three delegates allowed the Auxiliary to the Medical Society of the State of North Carolina go to the national convention instructed to

vote against any increase of national dues for the coming year. The motion was seconded by Mrs. C. F. Strosnider, and was carried unanimously.

A plan was discussed by which each Executive Board member might better prepare herself for service to the Auxiliary. It was suggested that each member purchase a hand book, studying it and passing it on to her successor.

There being no further business, the group adjourned to the porch, where the annual group picture of the Executive Board was made for publication.

Respectfully submitted,
MRS. ALFRED A. KENT, Jr.
Recording Secretary, Pro-tem.

MINUTES OF THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Annual Meeting, Tuesday, May 20, 1941

The Nineteenth Session of the Auxiliary to the Medical Society of the State of North Carolina was held at 10:30 a. m., May 20, 1941, in the Pine Room of the Carolina Hotel, Pinehurst. Mrs. Clyde R. Hedrick, President of the Auxiliary, was in the chair. Mrs. Isaac Manning, Chapel Hill, offered the invocation.

It was moved by the recording secretary pro-tem, Mrs. Alfred A. Kent, Jr., and seconded by Mrs. E. C. Judd that the reading of the minutes of the last annual session held in Pinehurst, May 14, 1940, be omitted and that they be approved as printed. The motion was carried.

The President's appointments for the following committees were read:

- (1) Courtesy Committee: Mrs. Ben Lawrence, Raleigh, Chairman; Mrs. P. G. Fox, Raleigh and Mrs. J. R. Terry, Lexington.
- (2) Approve minutes for publication: Mrs. J. A. Elliott, Charlotte, Chairman; Mrs. C. F. Strosnider, Goldsboro, and Mrs. E. C. Judd, Raleigh.
- (3) Committee to arrange material for transactions: Mrs. Alfred A. Kent, Jr., Granite Falls, Chairman; Mrs. W. G. Byerly, Lenoir, and Mrs. Clyde R. Hedrick, Lenoir.

The report of the treasurer, Mrs. E. C. Judd, which carried with it the auditor's report, was read by Mrs. Judd. The report was accepted with acknowledgment of Mrs. Judd's faithful efficiency. Mrs. Judd made the announcement of the prize awards for the year.

(1) Mrs. Clyde R. Hedrick's prize of \$5.00 went to the Eighth District for the largest number of paid up memberships by April 15.

(2) Mrs. P. P. McCain's prize of \$5.00 went to Hoke County, for the largest contribution to the McCain Bed Upkeep Fund.

(3) Mrs. J. S. Hooker's prize of \$5.00 went to Wake County for the largest contribution to the Student Loan Fund.

Mrs. Judd announced that Mrs. Hedrick had presented the balance of the president's expense account (\$93.75) to the upkeep of the McCain and Stevens Beds at Sanatorium and Black Mountain.

Mrs. Hedrick presented the guest speaker, Dr. Hubert B. Haywood, President of State Medical Society, to the Auxiliary. Dr. Haywood expressed his appreciation and praise of the Auxiliary in this manner: "Your Student Loan Fund, with its ideals of worthy philanthropy, could set no higher goal. Your endowment of beds in tubercular hospitals speaks for your kindness of heart and practical accomplishments. Hygeia, the only thoroughly authentic health magazine in the country, is so highly endorsed by you and your efforts to put it in schools and public libraries is to be commended."

The Hoke-Moore County doctors and their wives were joint hosts for this nineteenth session of the Auxiliary. Mrs. P. P. McCain outlined the entertainments which had been arranged for our pleasure. Corsages in the form of exquisite orchids were presented by the hostess Auxiliaries to Mrs. Clyde R. Hedrick, President, and Mrs. Hubert B. Haywood, wife of the President of the Medical Society of the State of North Carolina.

Mrs. C. F. Strosnider, first vice president in charge of organization, combined her report with those of the ten councilors who served as her co-workers. Mrs. Strosnider introduced the councilors present as she read their reports.

Mrs. J. S. Hooker, third vice president, was unable to attend the meeting, so her report was filed with the secretary for publication.

Mrs. James B. Sidbury, North Carolina's Councilor for the Southern Medical Association, reported that a copy of her report had been mailed to National Headquarters, and that she would not give her report, as it had been filed with the president for publication in the Transactions.

Mrs. Ben H. Kendall gave an interesting report of the meeting of the Auxiliary to the American Medical Association held in New York City, June 2-5, 1940.

Comprehensive reports were made by the chairmen of the standing committees. The research work under Mrs. R. S. McGeachy, of New Bern, showed careful study. Mrs. McGeachy presented a paper on the life and work of Dr. Martin Luther Stevens.

The service in memory of the members of the Auxiliary who had passed away since the last annual meeting on May 4, 1940, was conducted by Mrs. Isaac H. Manning, Chairman of the Obituary Committee.

Mrs. J. R. Terry, Chairman of Scrap Book, passed around the Scrap Book. Mrs. Frederick R. Taylor announced that \$5.00 was taken up at a free-will offering for the Jane Todd Crawford Memorial.

Mrs. William P. Knight, Chairman of the Nominating Committee, presented the following slate of new officers for the coming year: President, Mrs. Sidney Smith, Raleigh; president-elect, Mrs. R. A. Moore, Winston-Salem; first vice-president, Mrs. Clyde R. Hedrick, Lenoir; second vice president, Mrs. J. R. Terry, Lexington; third vice president, Mrs. J. S. Hooker, Chapel Hill; recording secretary, Mrs. Harry Winkler, Charlotte; treasurer, Mrs. E. C. Judd, Raleigh. A corresponding secretary was to be appointed by the president.

Mrs. R. S. McGeachy moved that the report of the nominating committee be accepted. Mrs. Ben Lawrence, of Raleigh, seconded the motion. The report was unanimously accepted.

Mrs. P. P. McCain in appropriate words installed the officers, who responded by pledging their loyalty and support to the objectives of the ideals of the Auxiliary. Mrs. Clyde R. Hedrick, retiring president, presented the gavel to Mrs. Sidney Smith of Raleigh, incoming president, with sincere wishes for her success. Mrs. Smith accepted the gavel, and the meeting adjourned.

Respectfully submitted,

MRS. ALFRED A. KENT, Jr.
Recording Secretary, pro-tem.

REPORTS OF OFFICERS

Report of Organization Chairman

As organization chairman I have written two messages to the councilors asking for information for the state and national reports and also offering my services to help organize new auxiliaries. At Mrs. Kent's request, I also wrote an article along

this line for the North Carolina Medical Journal. Much to my sorrow, there were no requests for help to organize a new auxiliary.

It was also the duty of this office to send in a report of this state's work in organization to the Southern Medical Association last fall and to the National Auxiliary for their meeting in June, 1941.

It was my pleasure to attend the fall board meeting in Raleigh, October 23, 1940, but I regret most sincerely not being able to attend the meeting at our president's home on April 4.

I have tried most sincerely and ardently to get a councilor for the fourth district. I have approached in person or have written every person in the district that I thought would serve earnestly and well, and each time I have been refused. An interested councilor, who is willing to work, is most important if the state auxiliary is to function efficiently and progressively in carrying out its high objectives and ideals. It was a real disappointment not to get one for this district.

The councilors who have served this year have done very fine work, and I hereby present a resume of their work as reported to the organization chairman.

First District—No report

Second District—No report

Report of Third District Councilor

Mrs. J. S. Brewer

There are two auxiliaries in the Third District.

1. New Hanover County Auxiliary:
President—Mrs. J. T. Hoggard, Wilmington
Sec.-Treas.—Mrs. E. S. Bulluck, Wilmington
2. Sampson County Auxiliary:
President—Mrs. A. N. Johnson, Garland
Sec.-Treas.—Mrs. W. H. Nelson

Three meetings are reported for the Third District, two being held in New Hanover County—one for the election of officers and one a tea honoring the new members of the auxiliary. Twenty-four doctors' wives were present. One meeting was held in Sampson County, at which officers were elected. Six members were present. There are eighty-seven eligible doctors' wives in the Third District.

Money Reported for the Third District

McCain Bed Fund	\$64.00
Hygeia Subscriptions	2.50
Membership Dues	35.00

Fourth District—No report

Fifth District—No report

Report of Sixth District Councilor

Mrs P. G. Fox

Wake County is the only organized county in the Sixth District. Its activities have been as follows:

Five "get-togethers" with an average attendance of thirty; a tea given by the president, Mrs. Charles Williams, last fall; three luncheon meetings; and one called business meeting. A bridge tournament was held, at which \$236.77 was cleared for local and state work. It was voted to be distributed, in part, as follows:

McCain Bed Upkeep	\$18.50
Stevens Bed	25.00
McCain Endowment	25.00
Student Loan Fund	14.00
Wake County Sanatorium	125.00

Five subscriptions to Hygeia were paid for by the auxiliary. These were placed in the four local hospitals and the Y. W. C. A.

The officers for the ensuing year are:

President—Mrs. A. C. Campbell
 First vice president—Mrs. John Hamilton
 Second vice president—Mrs. Charles Williams
 Secretary—Mrs. M. D. Hill
 Treasurer—Mrs. John Rhodes

Your councilor issued 184 cards to eligible members in all other counties of the Sixth District urging them to join.

Report of Seventh District Councilor

Mrs. Harry Winkler

Officers:

President—Mrs. James Nolan, Kannapolis
 Vice president—Mrs. Fred Y. Ketner, Concord
 Chairman McCain Bed, Secretary-Treasurer—
 Mrs. Julian B. Busby, Kannapolis
 Legislation Chairman—Mrs. Richard M. King,
 Concord

A splendid district meeting was held in Concord last fall with about forty people present. Dr. Hamilton McKay was the speaker. Following the address there was a tea followed by bridge. The Bulletin was sent to the president. All new doctors' wives were called on by the councilor. Fifty paid members reported.

Report of Eighth District Councilor

Mrs. William P. Knight

Forsyth County Auxiliary Officers:

President—Mrs. Robert L. McMillan, Winston-Salem
 President-elect—Mrs. Beverly N. Jones, Winston-Salem
 Corresponding Secretary—Mrs. John Preston Davis, Winston-Salem
 Recording Secretary—Mrs. R. L. Wall, Winston-Salem
 Treasurer—Mrs. E. D. Avery, Winston-Salem

Guilford County Medical Society:

President—Mrs. Marvin L. Slate, High Point
 Vice president—Mrs. J. Esmond Slate, High Point
 Secretary—Mrs. Karl Shepard, High Point
 Treasurer—Mrs. Glenn G. Perry, High Point

Standing Committees

Program—Mrs. F. R. Taylor, High Point
 Mrs. A. K. Maness, Greensboro
 Public Relations—Mrs. T. M. Stanton, High Point
 Mrs. Rigdon Dees, Greensboro
 Arrangements—Mrs. Phillip Davis, High Point
 Mrs. C. W. Durham, Greensboro
 Membership—Mrs. S. S. Saunders, High Point
 Mrs. J. W. Tankersley, Greensboro
 Publicity—Mrs. P. W. Flagge, High Point
 Mrs. H. L. Johnson, Greensboro
 McCain Bed—Mrs. T. D. Tyson, High Point
 Mrs. W. J. Benton, Greensboro
 Student Loan Fund—Mrs. W. T. Tice, High Point
 Mrs. W. J. Benton, Greensboro
 Courtesy—Mrs. E. T. Harrison, High Point
 Mrs. W. P. Knight, Greensboro

Forsyth County is again the leading county in the Eighth District. They have a total of seventy doctors' wives eligible for auxiliary membership. They have had four meetings with an average attendance of forty-five members. They concentrated their efforts this year on obtaining a large membership in order that the doctors' wives might become better acquainted. Their meetings were dinner meetings with either a speaker or music or games following. The auxiliary sent collections to the McCain Bed and the Student Loan Fund.

Forsyth County Auxiliary has two members who are officers in the State Auxiliary.

Guilford County has a total of one hundred doctors' wives eligible for auxiliary membership, but only twenty-six paid members. The auxiliary has had four lovely dinner meetings. They sent contributions to the McCain Bed and to the Loan Fund. They sent a lovely Christmas box to the patient in the McCain Bed.

Cards were written to members in unorganized counties urging that they send their dues to Mrs. Judd before the annual meeting. North Wilkesboro has an auxiliary and I am sure it has done splendid work. The Auxiliary has members in all counties in the Eighth District. The doctors' wives hold key positions in church work, school work, and club work; in fact, wherever there is a call for service, one or more doctors' wives are sure to be found. The councilor has written 100 letters, written cards, attended one board meeting, and made four talks in the interest of auxiliary work.

Report of Ninth District Councilor

Mrs. James W. Vernon

The Ninth District held its annual meeting in Mooresville on September 26, 1940. The following officers were elected for the year 1940-41:

President—Mrs. Lonnie Little, Statesville
 Vice president—Mrs. O. J. Corpening, Granite Falls
 Secretary-Treasurer—Mrs. C. L. Bittinger, Mooresville
 Dues to the amount of \$40.00 have been reported.
 Undesignated—\$5.00
 Lenoir—\$14.00
 Morganton—\$21.00

An effort has been made to interest the various counties of the district in organizing auxiliaries, as organization was the chief aim for the year.

Caldwell County continues the one bright spot in our district. This county reports an active auxiliary of fourteen paid members. They have been busy carrying on active social service work, bringing cheer to the sick and distressed. They have remembered with gifts those occupying the McCain Bed at Sanatorium and the Stevens Bed at Black Mountain; they have secured \$20.00 in subscriptions to Hygeia; and on March 31, Doctor's Day, they placed flowers in the office of every doctor.

Elected as officers for the year were:

President—Mrs. Douglas Hamer, Jr.
 Vice president—Mrs. O. J. Corpening
 Secretary—Mrs. Harry Hickman
 Treasurer—Mrs. Clyde R. Hedrick

Membership as reported to date: Caldwell County 14, Burke County 21.

Tenth District—No report

According to an estimate from Dr. I. H. Manning, the Auxiliary could have a membership of 1600, as there are about that many doctors' wives in the state eligible for membership. May we make an effort to enroll each and every one of them next year.

For the coming year, may I plead with the new councilors and presidents of the auxiliaries to send a list of their new officers, with their addresses, as soon as they are elected, to the organization chairman, as it is very important to have this list for contact in case of important work to be done by the auxiliary or literature to be distributed. And will you, also, keep your records so that when you send in your report to your councilor, and she in turn sends information to the organization chairman, you can state:

1. The number of auxiliary meetings held.

2. The number of meetings held by the auxiliary for lay organizations.
3. The average attendance at each meeting.
4. The number of eligible doctors' wives in the district.
5. What type of work each auxiliary does during the year.
6. What key positions doctors' wives hold in the district.

In closing, may I say it has been a real pleasure to serve as organization chairman with our splendid president, the excellent councilors, and fine board members. And I commend to you most highly the incoming organization chairman, Mrs. Clyde R. Hedrick.

Respectfully submitted,
ANNA L. STROSNIDER
Organization Chairman.

Report of the Second Vice President in Charge of the McCain Bed

During my tenure of office, Miss Marie Godwin, a nurse of Fayetteville, has been given the use of the McCain Bed at Sanatorium. It is impossible to predict how long she may have to be there, but so far she is doing very well.

The Stevens Bed at Black Mountain is being used by Dr. W. G. Byerly of Lenoir. In his case too, it is impossible to predict the length of his stay. Dr. Bittinger assured me, in his last letter, that Dr. Byerly was doing well. He was given pneumothorax on the affected side. At the last report, he was given some privileges and is not a strict bed patient.

Both these patients were remembered at Christmas time in the usual manner. We are glad to have members of the profession using these beds and hope for their early recovery.

Respectfully submitted,
MRS. JAMES H. McNEILL.

Report of the Third Vice President and Chairman of Student Loan Fund

The report of my immediate predecessor, Mrs. R. A. Moore, set forth the data concerning the Student Loan Fund for the past ten years. Since Mrs. Moore's report there has been only one request for a loan, which was made to Mr. Highsmith.

As has been customary, a prize of five dollars has been offered to the Auxiliary making the largest contribution to the Loan Fund. A report of the success of my canvass will be made at the meeting of the State Auxiliary in May at Pinehurst. The winner of the five dollar prize will be announced at that time, and the award will be made.

Thus far I have received no payments on loans previously made to students. I sincerely hope I will have a sizable contribution to the Student Loan Fund to report to our State Meeting.

Respectfully submitted,
MRS. JOHN S. HOOKER.

April, 4, 1941.

Report of the Corresponding Secretary

I have had a most pleasant year as Corresponding Secretary and have learned much about the Medical Auxiliary through my work with Mrs. Hedrick. I attended two regular meetings of the Executive Board, carried on all correspondence that the President instructed me to, and tried to assist her in any way possible.

Respectfully submitted,
MRS. W. G. BYERLY,
Corresponding Secretary.

Report of Treasurer

Mrs. E. Clarence Judd

Receipts and Disbursements May 20, 1940-
May 20, 1941

GENERAL EXPENSE FUND

Balance on Deposit May 20, 1940	\$ 179.63
Dues 1940-1941 for 466 members (50 cents of each dollar).....	233.00
	<hr/>
	\$ 412.63

McCain-STEVENS BED UPKEEP FUND

Balance on Deposit May 20, 1940	\$ 475.68
Dues 1940-1941 for 466 members (50 cents of each dollar).....	233.00
Contribution: Mrs. Clyde R. Hedrick (balance of allowance to President's Office).....	93.75
Contribution: Wake County Auxiliary	43.50
Contribution: Burke County Auxiliary	1.00
Contribution: Prize given by Mrs. Clyde R. Hedrick (won by Eighth District).....	5.00
	<hr/>
	\$ 851.93

McCain Endowment Fund

1940-1941

Balance in Savings May 20, 1940.....	\$1,745.29
Receipts:	
Contribution: (Mite box at Convention)...	7.00
Commission on Ads, Mrs. R. S. McGeachy	7.30
Commission on Hygeia, Mrs. K. B. Pace..	51.25
Contribution: New Hanover County.....	70.00
Contribution: Forsyth County	35.00
Contribution: Hoke County	25.00
Contribution: Wake County.....	25.00
Contribution: Craven County.....	10.00
Contribution: Guilford County.....	8.75
Contribution: Prize given by Mrs. P. P. McCain, won by New Hanover County	5.00
Contribution: Cumberland County.....	2.22
Interest	34.41
Total	<hr/>
	\$2,026.22

Disbursed:	
To National Tax.....	1.71
Balance, May 18, 1941.....	<hr/>
	\$2,024.51

Loan Fund

Balance in Savings May 20, 1940.....	\$ 657.52
Receipts:	
Contribution: Wake County.....	15.00
Contribution: Prize given by Mrs. J. S. Hooker, won by Wake County....	5.00
Contribution: Guilford County.....	8.75
Contribution: Collection at Convention....	7.75
April 20, 1941, Received payment on Loan, Miss Margaret Knight.....	25.00
Interest	11.62
Total	<hr/>
	\$ 730.64

Disbursements:	
September 13, 1940, Loan to Charles Highsmith, Dunn, N. C.....	100.00
Tax .....	.60
Total	<hr/>
	\$ 100.60

Balance	<hr/>
	\$ 630.04

Loans:

June 8, 1936, to Miss Margaret Knight \$60. (1938 pd. \$25. 1939 pd. \$10. 1939 pd. \$10. 1941 pd. \$15.....	\$ 0.00
October 16, 1936, to Miss Margaret Knight \$140.00—April 30, 1941 pd. \$10	130.00
February 10, 1937, to Miss Margaret Whittington	100.00
August 24, 1939, to Miss Margaret Whittington	100.00
September 13, 1940, to Charles Highsmith	100.00
Total	\$ 430.00

Disbursements

Mrs. Clyde R. Hedrick (Balance of allowance to President's Office) Contributed to Upkeep of Bed Fund	\$ 93.75
Lenoir News Topic (Stationery)	16.50
Mrs. Clyde R. Hedrick (Postage)	6.25
Edwards and Broughton Company (1000 membership cards and one 1941 stamp)	6.00
Post Office (500 stamped envelopes)	17.50
Mrs. David W. Thomas (National Treasurer 280 dues)	70.00
Mrs. A. A. Kent, Jr. (Postage, mimeographing, and mailing minutes)	7.93
Mrs. P. G. Fox (Postals)	1.74
Mrs. Ben Kendall (Postals and stamps)	2.50
Mrs. W. P. Knight (Postals and stamps)	3.50
Mrs. E. C. Judd (Treasurer Expense Account)	13.27
Miss Lunette Barber (Typing rolls and Treasurer Reports) ..	8.00
Tax .....	.57
N. C. Sanatorium (for patients 12 months)	199.93
Western N. C. Sanatorium (for patient 6 months)	99.39
Upkeep McCain-Stevens Bed	\$ 851.93
Expenses for Patients 1940-1941	299.32
	\$ 546.83
General Expense Fund	\$ 412.63
General Expenses 1940-1941	247.51
	\$ 165.12
Amount on Deposit McCain Endowment Fund	2,024.51
Amount on Deposit Student Loan Fund	630.04
Loans	430.00
	\$3,802.28

Respectfully submitted,
MRS. E. CLARENCE JUDD.

REPORTS OF COMMITTEE CHAIRMEN

Report of Program Chairman

Your program chairman has been very inactive. I did distribute some literature which I received from the American Medical Association and from the National Program Chairman at our fall board meeting. I requested and received quite a bit of material on various subjects, but to date have had no requests for it.

Respectfully submitted,
MRS. T. L. LEE.

Report of Research Chairman

DR. MARTIN LUTHER STEVENS

Dr. Stevens was born in Thornville, Ohio, in 1865, and graduated from the Baltimore Medical College in 1891-92. (This school later united with the University of Maryland.) He served as resident physician in Maryland Hospital 1891-92. He was licensed by the State Board of North Carolina in 1892 and located in Enochville, N. C., where he soon built up a large country practice. He married Miss Mary Lula Patterson in 1894, and in 1896 he moved to Concord, where he again enjoyed a wide practice. Afterwards he went to Asheville, and from 1901 to 1902 was physician in charge of Winyah Sanatorium of Asheville, an institution for the diagnosis and treatment of tuberculosis.

In 1903 he studied at the New York Post Graduate Medical School. On his return he opened an office in Asheville, giving special attention to lung diseases. He was a member of the staff of the Meriwether and Biltmore Hospitals.

He joined the North Carolina Medical Society in 1892 and was a regular attendant at the meetings, and at various times presented medical papers before the Society. In 1914 he was elected a member of the State Board of Medical Examiners, and he served until 1920. In 1930 he was elected president of the North Carolina Medical Society. From 1924 until his death in 1940 he almost annually represented the State Society in the House of Delegates of the A. M. A.

He was a charter member of the National Tuberculosis Association and was the first president of the North Carolina Tuberculosis Sanatorium and was on the consulting staff of the Western North Carolina State Sanatorium. He was consultant for the Royal League Tuberculosis Sanatorium located at Black Mountain, and was on the staff of St. Joseph's Hospital, Ambler Heights Sanatorium and Sunset Heights Sanatorium.

He was a fellow of the American Medical Association and of the American College of Physicians, and a member of the American Climatological Association and of the Southern Medical Association. He was certified by the National Board of Internal Medicine.

During the World War he served as chief of the Medical Advisory Board. He was the author of many articles, principally on the subject of tuberculosis. He also manifested a deep interest in the local medical society, and was a regular attendant. He was a member of the Lutheran Church, and was active in the Rotary Club.

He died in Asheville, January 20, 1940, at the age of 75. His loss was deplored as that of a leading citizen.

The following is quoted from resolutions passed by the North Carolina Medical Society: "Let us pause for a moment and consider the most outstanding of the qualities that have so endeared him. First of all, the unobtrusive gentleness that marked his every contact with those around him: his retiring disposition that recoiled from all that savored of ostentation: his quiet dignity that only added lustre to the many and well deserved honors that crowned his work. Next, his devotion to his profession that was an open book to all and his steadfastness to principle and purpose. Last and by no means least, twice in his life, once near the beginning and again near the end of his long life, wrested from serious illnesses strength to carry on. In organized society he was a good citizen; in organized society the same qualities held that made him eminent in his profession. Be it resolved then that the

life of Dr. M. L. Stevens be held up to the members of our Society, particularly the younger ones, as an example to be emulated."

Respectfully submitted,
MRS. R. S. McGEACHY.

Memorial Service

Mrs. I. H. Manning, Chairman of the
Obituary Committee

The Lord gave and the Lord hath taken away;
blessed be the name of the Lord.

During the past year God took from our midst:

Mrs. George L. Carrington, Burlington, on July 1, 1940.

Mrs. Erasmus H. E. Taylor, Morganton, on August 21, 1940.

Mrs. David Thomas Taylor, Washington, on February 27, 1941.

Mrs. S. D. Craig, Winston-Salem.

It was the voice of Jesus calling. His loving hands stretched out to draw them near.

"I am the resurrection and the life, saith the Lord; he that believeth in me, shall never die." St. John XI, 25-26.

And now, Lord, what is my hope; truly my hope is ever in Thee, I know that my Redeemer liveth, I heard a voice from heaven, saying unto me, From henceforth blessed are the dead who die in the Lord, even so saith the Spirit; For they rest from their labors.

Let us pray.

O Lord Jesus Christ, who by Thy death didst take away the sting of death, grant unto Thy servants so to follow in faith where Thou hast led the way, that we may at length fall asleep peacefully in Thee and awake after thy likeness; through Thy mercy, who livest with the Father and the Holy Spirit, in God, world without end. Let us say as He bade us say:

Our Father who art in heaven, Hallowed be Thy name, Thy kingdom come, Thy will be done on earth as it is in heaven. Give us this day our daily bread and forgive us our trespasses as we forgive those who trespass against us, and lead us not into temptation, but deliver us from evil. For Thine is the Kingdom, the power and the glory, forever and ever, Amen.

Thou who in Thy still rest
Our dear ones safe dost keep,
Thou who shall bring them back
One day from their long sleep,
Oh, keep us by Thy Grace
That we at last may be
When that bright morning dawns
At home with them and Thee.
Father in Thy gracious keeping,
Leave we now Thy servants sleeping.

Report of Scrapbook Chairman

During the year I have put about thirty articles and pictures in the Scrapbook, which were cut from various newspapers all over the state and were sent to me by Auxiliary members.

The idea of a Scrapbook was started more than ten years ago, and the material acquired is making an interesting and valuable volume.

Respectfully submitted,
MRS. J. R. TERRY.

Report of Hygeia Chairman

As Hygeia Chairman, I wish to submit the following report:

I attended the Executive Board Meeting that was held in the fall. I have written many letters and

many, many cards in the interest of Hygeia, but received very few acknowledgments. But thanks to the faithful few, I am happy to report a small increase over last year, and I have turned over to our treasurer, Mrs. Judd, a check for \$53.25 which was received from subscriptions to this magazine.

Respectfully submitted,
MRS. K. B. PACE.

Report of Press and Publicity Chairman

During the year your chairman tried to stress the importance of having regular news items about the Medical Auxiliary in the Woman's Auxiliary section of the *North Carolina Medical Journal*.

There have appeared in the Woman's Auxiliary section of the *North Carolina Medical Journal*: (1) A list of the Auxiliary officers and their addresses; (2) complete minutes of the annual meeting of the Auxiliary to the Medical Society of the State of North Carolina; (3) the minutes of the Executive Board Meetings; and (4) messages from our president, Mrs. Clyde R. Hedrick, of Lenoir. If we will cultivate a habit of turning to the Auxiliary page of our husbands' *Journal*, we can follow the workings of our Auxiliary and receive inspiration from the report of the local and district auxiliaries, and I am sure we will cooperate more closely with our Press and Publicity Chairman in the years to come. Remember that this is our medium of talking over and learning more about the Auxiliary and its workings. It is true that we are living in an over-organized period; but the medical profession, its practice, advancements, and problems, should be near to our hearts. If, as doctors' wives, we can get together and enlighten ourselves first, we can educate the public over our bridge tables.

Our Auxiliary has received publicity in eight major North Carolina newspapers during the season of activity. A layout of pictures of the officers with an announcement of the annual state meeting was released for last Sunday's papers. Group pictures of our councilors and of the chairmen of standing committees were made today to be released with the write-up of our annual meeting. A full story of the transactions of this meeting and the entertainments will be sent to the National Chairman of Press and Publicity at once.

Respectfully submitted,
MRS. ALFRED A. KENT, Jr.

Report of Public Relations Chairman

As chairman of the Public Relations Committee I am embarrassed to report a very inactive year. The name itself and the duties of this committee are so intangible that it is difficult to arouse enthusiasm or get results through remote control. If each auxiliary had a public relations chairman, with whom the state chairman could work, I feel that something might really be done.

During the past year I have sent to the president of each auxiliary an article from our national chairman, defining and explaining the duties of the committee; a pamphlet entitled "The Doctor's Wife" by Dr. Rock Sleyster, which should be read by every member of the Auxiliary; and a questionnaire to be used in a survey of the Women's Health Interests as an aid to the American Medical Association in planning radio programs of greater interest and usefulness to listeners.

Since I have had no response to any of these it is impossible to give the impressive report I had hoped to have.

Respectfully submitted,
MRS. WINGATE M. JOHNSON.

Historian's Report

The nineteenth annual meeting of the Auxiliary to the Medical Society of the State of North Carolina was held May 20, 1941, at the Carolina Hotel at Pinehurst with a registration of two hundred. Mrs. Clyde R. Hedrick of Lenoir, the president, presided.

A fall board meeting was held October 23, 1940, at the Sir Walter Hotel, Raleigh. Routine reports and business were conducted. Of special interest was the selection of a name for the bed in the Western North Carolina Sanatorium at Black Mountain, which the Auxiliary has recently assumed. This bed was named "Martin L. Stevens", in honor of Dr. Stevens, who served that section of the state so long and faithfully in the field of tuberculosis. The spring board meeting was held at the home of Mrs. Hedrick, and was followed by a luncheon at the Carlheim Hotel.

Respectfully submitted,
MRS. J. ROY HEGE.

Report of Chairman of Exhibits

The Chairman of Exhibits has the privilege of submitting the following report:

Arrangements have been made with Mrs. Beir, National Exhibit Chairman, for the North Carolina Medical Auxiliary 1941 exhibit. The exhibit this year consists of a poster design with the 1941 projects of the Auxiliary.

Respectfully submitted,
MRS. C. D. THOMAS.

Report of the Chairman of the Legislative Committee

In October, the Chairman of your Legislative Committee presented to the State Board of Directors the following modified form of the suggested program for Legislative Chairmen of the Woman's Auxiliary to the American Medical Association:

I. Objectives:

1. Informed auxiliary membership.
2. Intelligent cooperation and consultation with your medical society.
3. Enlightened public.

II. Plan:

1. Informed auxiliary membership.
 - a. Appointment of a legislative chairman in each district and in each county auxiliary—address to be sent at once to state chairman.
 - b. Distribution of copies of A. M. A. Auxiliary Legislative Program.
 - c. Familiarize yourself with pending Federal and State Legislation with special emphasis on "The Wagner Health Bill" and "The Wagner-George Bill".
 - d. Reading of your A. M. A. and state medical journals.
 - e. Reading of your A. M. A. eight-point platform.
 - f. Study Surgeon General Parran's plan for a crusade against syphilis.
2. Intelligent cooperation and consultation with your Medical Society.
 - a. At the request of your state and county medical societies, contact Congressmen and Senators.
3. Enlighten public:
 - a. Suggest that doctors organize "Speakers Bureau of Medical Economics". Offer these doctors as program material to your P.T.A. groups and to all women's and men's clubs.

In answer to the suggestion that copies of the A. M. A. Auxiliary Legislative Program were available, letters came from five councilors, to whom the additional desired programs were mailed at once.

The suggestion that a chairman of legislation be selected or appointed for each auxiliary in each district brought the names and addresses of two county chairmen, one each, for two districts.

Your Chairman of Legislation made impromptu remarks on the ways of forwarding the "Speakers Bureau" at one district meeting.

MRS. JOSEPH A. ELLIOTT.

Report of Jane Todd Crawford Memorial Chairman

As chairman of the Jane Todd Crawford committee I want to take this opportunity to thank the Executive Board for its permission to make an appeal at our State Meeting in May for a five dollar gift to the Jane Todd Crawford Memorial Fund, and the privilege of retaining all money in excess of five dollars to be applied to our own Loan Fund.

I wish to announce that I have in my possession ten copies (one for each district) of the history of this heroic woman and her famous physician, Dr. Ephraim MacDowell. Please get your copy today, inform your members, and we will get a wonderful response at our state meeting.

RACHEL F. TAYLOR.

April 1, 1941.

Report of "Bulletin" Chairman

As circulation chairman of North Carolina for the "Bulletin", which is the only official publication of the National Auxiliary, I have written approximately one hundred letters and cards. I have also approached a number of people personally, but my efforts have resulted in only 18 subscriptions. The quota is 71. Because of the inability of one person to make so many contacts over the entire state, and because I am convinced that letter-writing means little, I feel that with the help of the councilors or some other active member in each district the results would be more satisfactory.

It was the aim of our National Auxiliary to secure subscriptions from one-fourth of our membership. This was the first year the "Bulletin" has been published, and it requires time for the auxiliaries to become acquainted with it, and discover its usefulness. It also requires time to organize efforts and learn how to make a new idea successful.

There were twelve states which did not send in a subscription to the "Bulletin".

West Virginia, District of Columbia, Utah, and New Mexico sent in more than their quota.

The quota for all the states was 5,758.

The total number of subscriptions secured in all the states was 1690, or almost 30 per cent of the quota.

Next year we want every county auxiliary to subscribe to the "Bulletin", which alone would be more than our quota. Individuals need it too, if you are interested in plans and progress of the auxiliary from "border to border, and coast to coast. To inform others we must be informed ourselves", so let us make the enlarging of the "Bulletin" our special project for next year.

Respectfully submitted,
MRS. BEN KENDALL.

REPORT OF PRESIDENT

As President of the Auxiliary to the Medical Society of the State of North Carolina it is, at this time, my duty and privilege to submit a report of the work of the year 1940-1941.

First, I want to express my true appreciation for the honor bestowed upon me in electing me your president, and for the fine spirit of cooperation which has been so generously given me in my work. I thank each co-worker—advisory board, officers, chairmen of standing committees, councilors—and each individual member for the splendid way in which you have accepted your responsibility.

I have as your president had the interest of the Auxiliary at heart at all times, attempting in my feeble way to do the work of the office to the best of my ability. The correspondence which is the link that binds us to the National and Southern Auxiliaries has been carefully scrutinized and answered, and for this I have been very grateful to my corresponding secretary, Mrs. W. G. Byerly, for assistance and always helpful advice.

Soon after our state meeting, the second vice president, Mrs. F. M. Hauser, and the Historian, Mrs. Paul Yoder, found that they would not be able to serve. Mrs. J. H. McNeill of North Wilkesboro was elected second vice president. Mrs. Roy Hege of Winston-Salem was elected Historian. Both graciously accepted the duties of their offices. Some difficulty was encountered in obtaining councilors for two of our districts. In the realization that the councilors are the real foundation upon which the organization must depend, every effort was made to fill these offices.

I also found that we did not have a complete list of the doctors' wives, so upon my request, Mrs. Sidney Smith, our president-elect, has compiled by contacting the secretaries of the county societies a very necessary mailing list. I am sure this will prove to be a worth-while work, since it gives us direct contact with these ladies.

The organization work has been under the direction of our first vice president and immediate past president, Mrs. C. F. Strosnider. There are reports of some very good work in some of the counties. We have a district membership, or membership at large, of 192. There are 11 counties organized with a membership of 280. To date the Auxiliary has a total membership of 465.

We are very much indebted to Mrs. E. C. Judd, our very efficient treasurer, for her handling of our finances. The work of the auxiliary has gone along and the bills have been paid, with a substantial balance remaining in the treasury, as you will see from Mrs. Judd's report.

The McCain-Stevens Beds have both been occupied for the greater part of the year. Miss Marie Godwin, a nurse of Fayetteville, has been given the use of the McCain Bed at Sanatorium. The Stevens Bed at Black Mountain is being used by Dr. W. G. Byerly of Lenoir. Both these patients were remembered at Christmas time in the usual manner. We are glad to have members of the profession using these beds and hope for their early recovery. This work alone justifies any doctor's wife being an auxiliary member. The work of this year has been in the efficient hands of Mrs. J. H. McNeill.

Our Student Loan Fund had one request for a loan. After the usual procedure the request was granted. The detail condition of the loan fund has been reported by the chairman, Mrs. J. S. Hooker.

Articles have been written for each edition of the North Carolina Medical Journal. The ladies of the Auxiliary are very grateful to Dr. Wingate Johnson for his interest and helpful suggestions in carrying on this work. I want to recommend to all the

ladies the North Carolina Medical Journal as a source of much useful information, very necessary to a doctor's wife and a good Auxiliary member.

The fall Board meeting was held at the Sir Walter Hotel in Raleigh, and the spring board meeting was held in Lenoir. Both meetings were well attended, showing a healthy interest in the work of the Auxiliary. Your Executive Board at these two meetings have attended to the following matters of business.

- (1) The bed at the Western Sanatorium was named the Martin L. Stevens Bed in memory of the late Dr. Martin L. Stevens of Asheville, who served the medical profession so faithfully and so well. Your president received a letter of appreciation from Mrs. Stevens for bestowing this great honor upon her late husband.
- (2) It was decided to have some one appear on the program of the North Carolina Medical Society in an effort to stimulate interest in the Auxiliary work among the doctors of North Carolina, in the hope that, as a result of this interest, more of the wives will become members and interested in Auxiliary work. Mrs. P. P. McCain, our chairman of past presidents, and ever loyal member, will present this matter to the doctors at this meeting.
- (3) The Executive Board voted to cooperate with the Medical Society in its national defense work.

North Carolina was represented at the A. M. A. meeting in June by Mrs. Ben Kendall. Full reports of our work have been given to A. M. A. Auxiliary. Two articles have appeared in the *Bulletin* written by your president. All requests coming to my office from the A. M. A. Chairman have been promptly answered. North Carolina has been honored by the State of Utah Auxiliary in that a request came to your president for a full explanation of the plan of establishment and administration of the Student Loan Fund. This request came from their president, Mrs. James R. Morrell.

I want to call your especial attention to the *Bulletin* of the Woman's Auxiliary to the A. M. A. It is the official organ of the national organization, and from its pages our members may receive information of the work being done in the several states and keep in close touch with the mother organization. I feel that this is a very great aid in Auxiliary work and would like to request that as many members as possible subscribe to the *Bulletin*, so that we may become an informed state organization. Mrs. Ben Kendall has had this work in charge this year and has done a great work.

Our interest in Hygeia subscriptions should always be kept in mind, because from these subscriptions comes part of the support of the McCain-Stevens Beds. In this endeavor Mrs. K. B. Pace has been a faithful worker.

Mrs. Sidbury was our delegate to the Southern Medical Association and was unable to attend, but reports as requested were forwarded by mail.

Mrs. Frederick Taylor, chairman of Jane Todd Crawford Memorial has been asked to take up a collection at the annual meeting for the Jane Todd Crawford Memorial Fund.

Mrs. R. S. McGeachy, chairman of Research, has written a biography of Dr. Martin L. Stevens, for whom our bed at the Western Sanatorium has been named.

Doctors' Day was not observed as a whole over the state, but reports have come to me from several of the county auxiliaries in which Doctors' Day was fittingly observed.

Recommendations

After a year of struggle and earnest work as your president, I would like to submit the following recommendations for your consideration:

- (1) That an appropriate marker be purchased and placed at the Western Sanatorium for the Martin L. Stevens Bed.
- (2) That organizing chairmen be appointed in the eastern and western parts of the state to supervise and advise the councilors in organization work.
- (3) That the work started this year in preparing an active mailing list be continued and the organizing chairmen be furnished these mailing lists.
- (4) That the county auxiliaries take an active part in national defense and Red Cross work and cooperate in every way possible with the work as it will be outlined by the Medical Society.

Respectfully submitted,
MRS. CLYDE R. HEDRICK.

ADDRESS OF THE PRESIDENT OF THE NORTH CAROLINA MEDICAL SOCIETY TO THE WOMAN'S AUXILIARY

Hubert B. Haywood, M.D.

In the days before organizations and auxiliaries we were all rugged individualists striving in different ways to attain the same end. The day is past when the greatest good can be achieved by individuals working alone. Archimedes, a mathematician and philosopher of ancient Greece, said:

Give me a lever long enough
And a prop strong enough
I can single handed move the world.

When the North Carolina Medical Society has had difficult objectives to attain, and has set its sight on well nigh unattainable goals it has called upon the Woman's Auxiliary to be its lever and its prop. The brilliant results accomplished speak volumes for your help. For this we are grateful, but we ask for your continued aid. As you well know from your personal relationships with your husbands, you are much the better part of the individual firm to which you belong, although we are somewhat reluctant to admit it. The Woman's Auxiliary to the American Medical Association has helped the American Medical Association in no mean way in attaining and holding its high place in the life of America today. Without your ideals of service to stimulate us and hold us to high standards of conduct and action we would deservedly lose much of our prestige. We ask you to continue to inspire us with your sure help and noble example.

We have a noble heritage to pass on to our children. Their birthright should be preserved for them. In America, the well trained, conscientious physician holds an enviable position in society, and receives a reasonable and sure reward for his professional services. In no other country in the world, even before this present war, and in no age in history has a physician's position been so secure. You have contributed immeasurably to this, and a full share of the reward is your due right. In one hundred and fifty years we have built up the greatest democracy the world has ever seen, and we own 45 per cent of the entire wealth of the earth. To us belongs the right to think without restraint, and to voice our thoughts without limitation. Self reliance has been born in us. Security has become a reality. Free men with fearless minds operating in the field of medicine have wrought great miracles. In research laboratories, medical schools and hospitals, remedies hitherto unknown to man have been

discovered and put to use. In the short period of our country's existence the life span of a man in the United States has been nearly doubled. The life expectancy of man, which was thirty-five years, now is sixty-two. In Germany today, where free speech and free thinking are denied and where medical science has been relegated to the control of the Nazi Party, 80,000 more people die annually than before 1933. There has been an increase in all infectious and constitutional diseases of childhood. In the United States there are some who seek to establish political control of the practice of medicine. Their arguments are plausible and alluring, but the accomplishment of this purpose would at first hamper, and then progressively break down the morale and effectiveness of the individual physician. A persistent campaign covering a period of twenty years has culminated in what has been called "The National Health Program" and the "Wagner National Health Bill". These plans embody a step-by-step breakdown of the present system of medicine, and the establishment of bureaucratic medicine under political control. Political control of American Medicine will lead to a lethargic creeping paralysis which will place the health of every individual in jeopardy. The present world-wide crisis has temporarily quieted this menace, but it will undoubtedly lift its head again to strike at our system and to foist upon you a totalitarian power system. May we ask you of the Auxiliary to oppose this by both the written and spoken word. Do not let us follow false gods or allow the public to worship them.

Your Students Loan Fund, with its ideals of worthy philanthropy, could set no higher goal. Your endowment of a bed in a tubercular hospital speaks for your kindness of heart and practical accomplishment. Hygeia, the only thoroughly authentic health magazine in the country, has been placed in school and public libraries all over the state through your beneficence. Your Public Relations Committee has placed medical speakers on public lecture platforms in all parts of the country, and on the radio. You have used the radio programs sponsored by the American Medical Association. You have availed yourself of the literature on health questions distributed free of charge by the American Medical Association Publishing Company. You have assisted in the sale of tubercular Christmas seals, and aided in the campaign against infantile paralysis. In your own communities you have furnished leaders who have been militant and fearless in approaching local health problems. The public health program of your own state invites your aid. Your efforts in the field of maternal and infant welfare will be a benefaction to those born in less fortunate circumstances in life than you. Leadership in this field will be gladly furnished to you by the proper authorities at the State Board of Health. The Field Army in cancer work always needs more helpers. May I pass on to you the idea that a physicians' aid fund for indigent, sick and unfortunate physicians would be a benefaction. Funds could easily be allotted from Medical Society dues to set up a fund for worthy physicians and their wives. The proper persistent impetus from the Woman's Auxiliary could help get this started and carried to a successful finish. A broadening and enlarging of our mental hygiene and child guidance program is an urgent need in our state. May I say that your interest will do much to safeguard the health of our young men who are now, or who will be, in army training camps. The evil of time on their hands with no healthy amusements will often take them to places where their whole future may be ruined by contracting social diseases. A fearless fight to suppress prostitution around camps, and to round up and treat clandestine prostitutes will be a real ac-

complishment for any organization, be it a governmental or social agency.

You are a select body of women, and the public rightfully expects a high type of leadership to come from your ranks. I do not dare to think that I have brought you anything new, for most of you know far more about these things than I. You as individuals have value as individuals, but you have far more value as members of the social group seeking the larger goals of civilization. "Human value does not lie in an easy life, but in an active, assertive, creating life." For this reason you must be concerned with a social philosophy which deals with human wants and needs, and this must become a part of your social environment.

BEING A WOMAN

Mrs. V. E. Holcombe

President, Woman's Auxiliary to the American Medical Association

Charleston, West Virginia

As President of the Woman's Auxiliary to the American Medical Association, I appreciate the opportunity of meeting you on this enjoyable occasion.

Being a woman has always been the most arduous profession that any human being could follow, but year by year it grows more complicated and difficult. To be a man is a simple proposition. It requires no particular gift or talent or special technique. He has only to be as nature made him, and if nature didn't turn out a job that was anything to brag about it doesn't matter.

With a woman it is entirely different. She has to be a compendium of all the arts, graces and virtues even to get by. She must have brains under her permanent wave, but keep them carefully concealed. She must dress like a fashion plate, yet run up no bills. She must be a prestidigitator who can play the piano with one hand and perform on the gas range with the other.

In a word, a woman is expected to be a lady love, an encyclopedia, a chum, a seamstress, a nurse, a hostess, a perpetual alibi for her husband, a financial agent, a commissary department, a chef and a standing excuse; and even at that no man thinks that she is anything to write home to mother about.

A man unaccustomed to praising his wife went out of his way to call her an angel.

"Mary," he said one morning, "you are an angel." And she felt charmed all day. In the evening she ventured to ask him why she had been so honored. "Well," said the wily one, "you are always flitting about; you are always harping on things; and, by your own account, you have nothing to wear."

In recent times women have awakened to the fact that their so-called inferiority was simply the result of a lack of opportunity, and to the facts of our economic structure. Then began a gradual progress known as the emancipation of woman, which is still going on today. There are three factors that helped women tremendously in their emancipation. All three begin with the letter "M".

The first "M" of emancipation was the Machine. With the introduction of steam, and the beginning of the machine age, women came into their own again economically.

The second "M" was the Microscope. The microscope taught men facts of life. It taught us that in the production of a baby, the male and the female elements were exactly equal. This laid the ghost of the inferiority of women from a scientific angle, once and for all time.

And the third great "M" of emancipation is Mental

Hygiene, or the modern science of psychiatry, which traced the struggle of the sexes back to its lair in the dark past of history, and showed how ruinous this struggle for domination and prestige has been throughout the ages. Of course this process of emancipation is not entirely finished. It goes on all the time, with the males attempting to retain their alleged privileges, and the women trying just as hard to batter down the old traditions, and make themselves free and equal.

A prominent woman speaker recently told an audience at the Exposition of Women's Arts and Industries that with women's ever increasing influence in every walk of life, they have that much more responsibility.

It is always a thrill to see what women are doing and what they can do. It adds to my already firm conviction that women are being more and more influential in every walk of life.

Always and always the world has looked to its women to do the little things, and whether we like it or not the world is going to keep right on looking to us for those things. It is the little things in life which count.

Our organization has brought into being for a definite purpose. We have an interesting and powerful organization to aid the interests of the medical profession.

Medicine has a great responsibility; the Woman's Auxiliary has a great responsibility. Let us search our hearts and see if we have justified our organization. The Auxiliary is greater than any one member, but depends on each member and her relation to the Auxiliary as a whole. Each of us has a place in life. The physician's place is among the sick and those who need guidance in health. By our choice we have taken this place with him.

We must remain free of entanglements so that as an organization and as individuals we can support those high principles to which our organization has pledged itself. We must have this independence to be free to oppose those things that tend to weaken and destroy organized medicine.

The strength of a nation is represented by the virtue and intelligence of its womanhood. If history teaches us anything it is that no nation has ever risen higher than its women. Noble womanhood will make a great nation; weak womanhood will prove the undoing of the strongest nation.

Of all the new fields entered by women you cannot point to one that has not been blessed by the touch of her influence.

Our responsibilities are many and varied. We are doing our part and will discover and carry out new duties in the future. Let us work more diligently this year than ever before, thus proving again to our parent organization that we are worthy of the name "Auxiliary to the American Medical Association".

We have selected the project of the enlarged circulation of the Bulletin this year, and we fully realize that we have chosen a very difficult task; however in so doing we have one thought in mind: that our membership must themselves be educated in the whole program of the Auxiliary before we can intelligently reach out and accomplish the aims and objectives of our very worthy organization. In the pages of the Bulletin you will find the suggested programs of the various committees, which direct the policies of the national officers in their earnest and conscientious effort to serve you.

It is our purpose not to overemphasize the work of any one committee, but to combine and correlate the activities of all the committees in order that our work may be more effective and far reaching. This can best be done by a well established official auxiliary publication.

ACCEPTANCE SPEECH

Mrs. Sidney Smith

I appreciate the honor which this office bestows. I am happy to serve an organization solely dedicated to the causes of the medical profession, which inspires the loyalty and enthusiasm of us all. There is not one of us here who does not pick up the burdens and the problems of our husband's profession, and it is only natural that we should endeavor to arrive at solutions to some of these problems as an organized body. Collectively we can and have accomplished a great deal.

The National Auxiliary, under the guidance of the American Medical Association, has formulated a careful policy for us in the states, evolving after twenty years of thought, study and experience. Ours is a program of education, and if we are to inform others we must apply ourselves diligently to a study of preventive medicine, we must aid in the distribution of *Hygeia*, the authentic medical publication for the lay public, and we must have a thorough understanding of the importance of retaining the present form of organized medicine as opposed to the bureaucratic methods of socialized medicine.

We must school ourselves to speak for the profession in such important lay groups as the women's clubs, the parent-teacher associations, the American Association of University Women, the League of Women Voters and similar organizations. It is important that such specific work should be carried on under the direction of capable public relations chairmen in the counties, as restraint is often the watchword for the medical profession, rather than aggression.

In this work we are united with more than 23,000 women—wives of doctors—throughout the United States; we are one of thirty-eight states actively engaged in the work of the Auxiliary. We are proud to be a part of the Southern Region, the only one of the four national regions 100 per cent organized, and are proud that our own Mrs. Joseph A. Elliott of Charlotte, a past state president, is an immediate past member of the committee for this region. The South led the nation last year, contributing 225 new county auxiliaries to the national organization.

Here in North Carolina our work embraces both the national program and the very splendid state program dedicated to the welfare of others. We are supporting two beds for tubercular patients in State sanatoriums; we are building a \$10,000.00 Endowment Fund for the first of these; and we maintain a Student Loan Fund for the use of sons and daughters of doctors who might otherwise be unable to complete their college educations.

During the seventeen years of our existence as an auxiliary to the Medical Society of the State of North Carolina we have enjoyed the highest type of leadership. It is a tribute to the organization that your past officers retain active interest in all that the Auxiliary undertakes. It is noteworthy that eight of your past presidents are in attendance at the meeting today.

I shall pick up the work where they have left off, attempt to guide it smoothly on without interruption, and, with your cooperation, press forward through another year of achievement for us. The measure of our success will depend entirely upon the county auxiliaries, as they are the basic unit of both the state and national bodies. Your state officers are commissioned to keep the counties informed on projects, programs and policy, and to be of all possible assistance to the county auxiliaries.

During the coming year we shall strive to further

the work of the Auxiliary by increasing membership, both by adding members to the present county organizations and by organizing new county groups. However, it is not by numbers alone that the quality of our progress will be determined. I would rather that the existing county groups will devote themselves to the national program and continue their loyalty to the philanthropies of the state program than to have a larger number of counties considered organized but remaining inactive and uninformed as to the work of the state and national auxiliary.

And now a word about war, which is uppermost in the minds of all of us. There is none who knows what lies ahead. As doctors' wives, let us be in the front ranks of those who would serve for the relief of others; for suffering is closely identified, unfortunately, with the medical profession in which we are a vital factor. Be active in your Red Cross chapter and in the recognized agencies for war relief work.

Gratefully have I received your many assurances of confidence, your comprehension of the sacrifices which you exact from those you elect to office. I hope that during the coming year I may have the privilege of knowing more of you personally. I shall be eager to serve you, and if it be God's will I hope that we may meet together again next year, to take inventory and to establish that progress has been made.

Report of the Meeting of the Woman's Auxiliary to the American Medical Association

New York, 1940

It was my privilege to attend the annual meeting of the American Medical Association in New York with my husband, and I shall mention just a few of my impressions.

The registration this year was the largest ever, 12,864 physicians having registered during the five days of the convention. More than 900 Auxiliary members and guests registered at Auxiliary headquarters.

The exhibits of the American Medical Association were housed in the Grand Central Palace, about two blocks from the headquarters in the Waldorf-Astoria. All the space on four floors was filled with these exhibits showing the very latest in methods of treatment and surgery, new instruments and equipment, drugs, books, foods, films, public health, the various specialties, etc. They seem to increase in excellence each year and they were thronged each day with interested physicians, nurses, sisters from the various Catholic hospitals, Auxiliary members, and guests of the physicians. This year it was said to be the largest technical and scientific exhibit ever assembled. At its close, all the surplus supplies, said to be worth about \$50,000, were packed for shipment to the French War Relief.

Physicians from the following countries were registered: British Columbia, Africa, Philippine Islands, Puerto Rico, Canal Zone, Hawaii, Costa Rica, Cuba, China, the South American countries, New Brunswick, Newfoundland, Canada, Germany, Poland, Hungary, Turkey, Mexico, Siam, Virgin Islands, Soviet Russia, Italy, France, India and Spain.

The entertainment committee arranged a diversified program of entertainment giving the guests inspiration, thrills and fun. New York's multiple and varied attractions made it desirable to deviate from the customary routine sightseeing and evolve a program of choice. Guests were furnished a strip of tickets which could be used any time during the week, but the general session and social functions were so interesting that no one could afford to miss them.

Mrs. Rollo K. Packard of Chicago, who is a very charming person, presided at the business sessions.

Her report and those of the other officers and standing committees showed that each had spent a very busy year and had accomplished much for the Auxiliary. The general theme of all the meeting was "preparedness and our readiness to respond to any national movement as no other organization".

I was proud of our representation from North Carolina, and we enjoyed a program of entertainment features which will leave a lasting impression.

Respectfully submitted,
MRS. BEN H. KENDALL.

Report of the Councilor For the Southern Medical Association

Under the strong leadership of our president, Mrs. C. F. Strosnider, Goldsboro, the North Carolina Auxiliary made forward strides in membership and in intelligent interest during the past year. We have three projects supported by our State Auxiliary: (1) A Student Loan Fund to help children of doctors with their academic, not professional education. (2) The McCain Bed at the State Tubercular Sanatorium which was named for its superintendent, Dr. P. P. McCain, and his wife, Sadie McBrayer McCain, who was our organizing president and whose interest and help through the years have contributed

greatly to our success. This bed is used by doctors and their families first, but may be used by any worthy patient. (3) The McCain Bed Endowment Fund which is self explanatory. A new State Tubercular Sanatorium has recently been opened in the western part of the state, and the Auxiliary voted to support a bed in it—the Stevens Bed, named for the late Dr. M. L. Stevens of Asheville.

Doctor's Day was observed in North Carolina, but not so universally as we could wish.

The research work, under Mrs. R. S. McGeachy of New Bern, is being taken care of adequately. We feel that we are making a real contribution to the medical annals of the state.

Mrs. Leslie Lee, Kinston, Chairman of the Jane Todd Crawford Memorial Fund, raised \$50.00 for this work.

Our annual meeting was held at Pinehurst last May with the president of the Southern Medical Auxiliary, Mrs. C. A. Corn, Greenville, S. C., as our guest speaker. Mrs. Clyde R. Hedrick, Lenoir, was elected president of our State Auxiliary for 1940-41. Mrs. Hedrick held her fall board meeting in Raleigh in October. At this meeting the Stevens Bed received its name and plans for the year's work were perfected.

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1940-1941

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 Mrs. Robinson, D. E.....Burlington
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 Mrs. Rogers, J. R.....Raleigh
 Mrs. Root, A. S.....Raleigh
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 Mrs. Rosser, R. G.....Vass
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 Mrs. Selby, W. E.....Charlotte
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 Greensboro
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Before filling out the information card, read the instructions carefully. Physicians are especially urged to state whether or not they are on extended active duty for the medical reserve corps of the United States Army and Navy. Fill out the card and return it promptly whether or not a change has occurred in any points on which information is requested. If a change of address occurs before March 1, 1942, report it at once. Should you fail to receive a card before the first of October, write at once to the headquarters office stating that fact and a duplicate card will be mailed.

Squibb Releases Parentosol-B A High-Potency Preparation of Thiamine, Riboflavin and Nicotinamide

A high-potency preparation for intravenous administration containing three pure synthetic vitamin B complex factors indicated in the treatment of pellagra and other conditions involving severe deficiency of thiamine, riboflavin and nicotinic acid, has been developed by E. R. Squibb & Sons, New York. It is supplied in 1-cc. ampules, each cc. containing 10 mg. thiamine hydrochloride (3,333 U.S.P. XI units), 1 mg. riboflavin and 100 mg. nicotinamide, and is sold in boxes of six ampules.

Evidence is increasing that under certain circumstances an amount of vitamin B, in excess of that ordinarily received in the diet may be desirable, and that deficiencies of at least two other members of the vitamin B complex, nicotinic acid and riboflavin, are relatively common. Parentosol-B represents a potent and well-balanced combination of these three factors. It is particularly useful in pellagra, because, although pellagra patients respond to administration of nicotinamide with disappearance of many of their symptoms, thiamine often is required to relieve the peripheral neuritis and riboflavin to cure the cheilosis which frequently accompanies the condition.

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New Treatment of Diarrhea in Babies

Before the advent of Mead's Pectin-Agar in Dextri-Maltose, there were two methods of treating diarrhea in infants: (1) The "starvation" or "rest" method, consisting of withholding food during the duration of the diarrhea, offering the baby water and carbohydrate solutions, (2) The "Finkelstein method," based on the theory that some carbohydrates are especially likely to cause fermentation and prolong diarrhea. His method consisted of high protein feedings in the form of protein milk, sometimes with added carbohydrate, and continues to have many advocates, especially in breast-fed infants. One of the successful modifications has been Casec (calcium caseinate), which can be used for both breast-fed and bottle-fed infants.

In recent years, the use of raw apple and weak tea for treating diarrhea has had various proponents. The literature contains reports by Birnberg, Reglien, Kaliski, Giblin and Lischner, McCaslan, Tompkins, Borovsky, Stein, and Hunt. Smith and Fried believe that any beneficial effects from scraped raw apple are due to the partial starvation effected by the regimen. The success of apple and tea therapy has stimulated hypotheses as to the effective agent. Moro attributed its value to tannic acid. Heisler would also give credit to malic acid and to the mechanical cleansing of the intestines, while Scheer places most emphasis on indigestible bulk. Malyoth believes pectin and cellulose are the active agents.

Based on their experience with apple, Winters and Tompkins devised a mixture of pectin, agar and Dextri-Maltose which was more successful. Others have privately confirmed their finding that a mixture of this nature is of value in diarrhea. Kutscher and Blumberg studied the use of the pectin-agar mixture with and without carbohydrate. They concluded that the addition of Dextri-Maltose to the other constituents was a definite advantage. Various reasons for the effectiveness of both pectin and agar have been advanced but none has a background of experimental proof. It has been claimed that pectin is bactericidal, that its constituent galacturonic acid functions as a dextroxyfying agent, that it absorbs toxins and enmeshes bacteria, that its hydrophilic nature prevents dehydration, and that it is soothing to an inflamed gastrointestinal tract. Bulk is the only valuable characteristic advanced for the use of agar.

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1. Knight, F., and Shelanski, H. A., "Treatment of Acute Anterior Urethritis with Silver Picrate," Am. J. Syph., Gon. & Ven. Dis., 23, 201 (March), 1939.

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THE FIRST TEN YEARS OF DUKE UNIVERSITY SCHOOL OF MEDICINE AND DUKE HOSPITAL

WILBURT C. DAVISON, M.D.
DURHAM

The statement made fourteen years ago at the meeting of this society is again emphasized: "It is the great desire of everyone connected with Duke University so to carry out the plans that your cooperation will be merited. We all wish you to regard this school as yours. Any suggestions which will increase the service of this school to the state will be more than welcome."⁽¹⁾ It is a pleasure to report that since then the profession has been helpful in suggestions and constructive criticism. These, and suggestions from patients, have been given the most careful study, and many improvements have resulted. Duke Hospital seeks to serve the profession and the state, and the following report of ten years of hard work is presented not as a record of accomplishment but as an inventory which, it is hoped, will encourage further critical suggestions.

Duke Hospital

During the building program from 1927 to 1930, the following doubt was frequently expressed: "Where will the patients come from and will there be enough?" However, the experience of the past ten years at Duke has corroborated Osler's statement⁽²⁾, quoted at the meeting of this society in 1927, that

a large metropolis was not essential for a teaching hospital. The complete and unexpected recovery of the first patient, an apparently dying infant, admitted on July 21, 1930, may have been a happy omen, as the growth of the Hospital has exceeded everyone's anticipation. Seventeen patients were admitted that first day. By the fourth day, the hospital census was 50; by Armistice day, 1930, it was 100; and it reached its peak of 433 on May 3, 1940. The 100,000th patient was examined on April 8, 1938, and on the tenth anniversary of the opening of the Hospital, the 144,142nd patient was registered. Many of them have made repeated visits to the Hospital, which are not included in this total.

During these ten years, 3,662 infants have been born in the Hospital and 44,171 operations have been performed. Nearly one million days of hospital care have been given (fig. 1 and 2). Fourteen per cent of the patients come from a radius of twenty miles, and the remainder come from the other ninety-nine North Carolina counties and thirty-six other states. The average distance traveled is seventy miles. Instead of needing patients, as many predicted in 1927, Duke Hospital soon required more beds. A new medical building, with two floors of offices and examining rooms for the Medical and Surgical Private Diagnostic Clinics and 113 additional private and semi-private beds, was completed June 30, 1940, bringing the total beds to 604, including 50 bassinets.

Duke, as well as many other hospitals in

McBrayer Memorial Lecture, presented at the Second General Session, Medical Society of the State of North Carolina, Pinehurst, May 21, 1941.

From the Department of Pediatrics, Duke University School of Medicine and Duke Hospital, Durham.

1. Davison, W. C.: The Duke University School of Medicine, Tr. North Carolina M. Soc. 74:35 (April 18-20) 1927.
2. Osler, W.: Oxford—Student Life and Opportunities Offered to Rhodes Scholars; Yale Medical School—Improvements Suggested—New Departments and Clinics Needed. Yale Daily News, 36:1 (April 25) 1913.

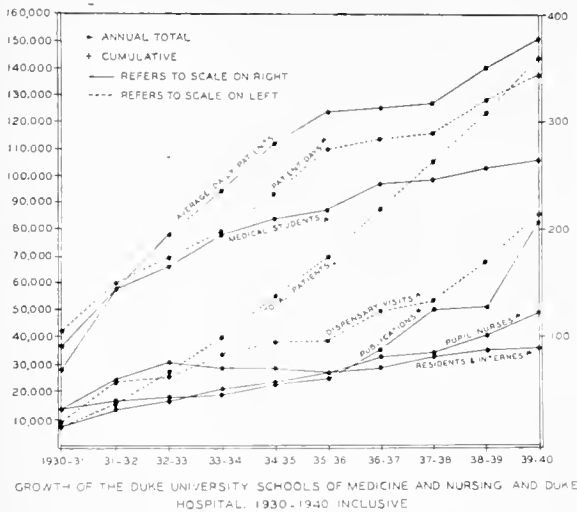


Fig. 1

North Carolina and South Carolina, is providing sound medical and surgical treatment, but the really unique contribution is the diagnostic service of the Duke Dispensary and the Duke Diagnostic Clinic. It is now possible for physicians in general practice in North Carolina and surrounding states to obtain help in their diagnostic problems, not only for patients who can pay and who formerly were sent to Baltimore and Philadelphia, but also for the far greater number who have no financial means. The establishment of the teaching clinics of the Bowman Gray School of Medicine of Wake Forest College and the Baptist Hospital at Winston-Salem also will aid in the solution of this problem.

Public Dispensary

The Public Dispensary provides diagnostic service for patients who cannot pay the usual fees of consultants. In the 131 examining and treatment rooms, an average of 400 patients per working day are examined by members of the Hospital staff, which comprises eighteen specialties. During the past ten years, approximately 500,000 visits have been made. The Public Dispensary charge is \$1 to \$5 for the first visit and 25 cents to \$1 for return visits, plus the actual cost of x-rays and other materials used. If physicians will make appointments in advance for their patients, troublesome delays will be avoided.

Private Diagnostic Clinic

The Private Diagnostic Clinic was organized to co-ordinate the diagnostic studies,

and to give better care at moderate cost to private patients. The clinical staff of Duke Hospital and the Duke School of Medicine forms the professional staff of this Clinic, while the financial side is handled by a business manager.

Medical Students

Duke has had 696 medical students, 27 of whom are women. They were selected from 6,986 applicants—a ratio of one admission to ten applicants. Those admitted attended 261 universities and colleges and came from 42 states, 25 per cent being from North Carolina. Of the 374 medical graduates, 209 are still interns and residents. Of the 165 in practice, 40 per cent are in general practice and the remainder are in twenty-five specialties, the majority being in internal medicine, surgery, pediatrics, public health, orthopedics, otolaryngology and ophthalmology. As a result of the present crisis, the number who hold Army or Navy commissions is increasing rapidly, and the 65th General Hospital is being organized by the staff, graduates and former interns. Sixty-seven per cent of the Duke graduates born in North Carolina, and 14 per cent of those born elsewhere are practicing in twenty-nine towns in North Carolina. An additional 25 per cent of the graduates have located in ten other Southern states—a total of 54 per cent practicing in the South. The remainder are in 19 Northern and Western states and one foreign country.

Interns and Residents

The 312 interns and residents who have spent one to seven years in Duke Hospital during the past ten years are in every sense graduate students, who are receiving instruction as well as gaining experience. Forty-three per cent of the resident staff were graduated from Duke, and 57 per cent from forty-six other medical schools. A hospital, like a medical school, increases the number of physicians practicing in the state—for example, of the 153 former members of the Duke Hospital house staff who were graduated from other medical schools and who are now in practice, 38, or 25 per cent, have located in fourteen towns in North Carolina, making a total of thirty-seven towns in the state with one or more Duke graduates or former interns.

Statistics of the Duke University Schools of Medicine, Nursing and Dietetics, and Duke Hospital, 1930-1940

Year	1930-1931	1931-1932	1932-1933	1933-1934	1934-1935	1935-1936	1936-1937	1937-1938	1938-1939	1939-1940	Total 1930-1940
Medical Students	70	144	165	193	210	217	241	244	256	259	696—1
Medical Graduates ²	0	17(5)	14(3)	31(5)	48(8)	38(12)	51(6)	51(11)	60	58(5)	374(55)
Interns and Residents	16	33	41	49	57	64	71	80	85	86	312—3
Pupil Nurses	33	60	74	69	60	65	78	82	98	119	402—4
Nursing Graduates ⁵			14	22	19	15(1)	19(6)	18(19)	23(18)	21(19)	151(63)
Student Dietitians	1	3	3	4	4	4	4	4	6	6	39
Total Patients ⁶	6,248	15,754	26,422	39,796	54,659	69,469	87,095	104,136	122,810	143,180	143,180—7
Average Daily Patient Census	91	143	193	234	279	308	311	316	350	375	
Maximum Daily Census				278	339	348	355	360	389	433	
Total Days of Hospital Care	42,269	60,362	69,521	78,103	92,336	109,150	113,654	115,474	127,710	137,307	945,886
Percentage of Part and Full Charity	62	65	79	76	66	68	64	56	56	52	
Total Visits in Public Dispensary	9,581	22,959	24,428	32,938	37,641	38,026	49,538	52,364	66,946	85,536	419,957
Scientific Publications by Staff and Students	33	38	41	45	56	62	87	124	126	204	816

1—627 First-year, 5 Second-year and 64 Junior students (total 696) were admitted 1930-1939 inclusive from 6,986 applicants.

2—The first figure indicates those who received the degree of Doctor of Medicine and that in parentheses those who also received the degree of Bachelor of Science in Medicine.

3—Total interns, assistant residents and residents who have spent 1-7 years in Duke Hospital, 1930-1940.

4—Total First-year pupil nurses admitted 1930-1939.

5—The first figure indicates those who received the Diploma in Nursing and that in parentheses those who also received the degree of Bachelor of Science in Nursing.

6—These figures are cumulative; each new patient (Hospital, Public Dispensary and Private Diagnostic Clinics) is given a consecutive number which remains the same regardless of the number of times he or she returns to the Hospital.

7—On July 21, 1940, the tenth anniversary of the opening of the Hospital, the 143,182nd patient was registered.

Fig. 2

Postgraduate Study

The School of Medicine is not limited to the training of its own students and staff, but extends to the members of the medical profession the benefit of everything it has. Graduates in medicine are welcomed especially at the various clinics and demonstrations in medicine, surgery, obstetrics, and other specialties, which are held from 9 a. m. to 12:30 p. m. each Saturday and at the clinical-pathological conferences at 5 p. m. on Fridays. Postgraduate internships, for one or two weeks, are available to physicians in practice. No fees are charged; room and board can be obtained for \$10 per week. Each October for the past six years a three-day postgraduate symposium has been given at Duke. During the past ten years 243 visiting lecturers have given clinics and lectures at Duke Hospital, to which the medical profession has been cordially invited. Through the cooperation of the medical schools of the University of North Carolina, Wake Forest College and Duke University, two-day postgraduate clinics have been given each year at the Lincoln Hospital, Durham, for the colored physicians of the state. This year, through the efforts of the State Board of Health, the School of Public Health of the University of North Carolina, and the U. S. Children's Bureau, five-day courses in obstetrics and pediatrics for general practi-

tioners are being given every week at Duke Hospital.

Research

A medical school has a triple function—the care of patients, the training of physicians and the addition to medical knowledge, or research. The last is necessary not only to extend the frontiers of medical science, but also to stimulate the staff and students. Medical students, through research, should be encouraged to develop an open mind toward new discoveries, a spirit of inquiry, a habit of curiosity³, critical judgment, and a healthy scientific scepticism as antidotes to the therapeutic credulity so easily bred by pharmaceutical detail men⁴.

This research work during the first ten years has produced eight hundred and sixteen publications, including six books. The following are some of the subjects studied: fungus infections, nutritional problems (pellagra, sprue, etc.), virus diseases, wound infections, brucellosis, Hodgkin's disease, tetanus, rabies, diabetes, endocrine disturbances, amebiasis, parasitic infestations, lung abscess, osteomyelitis, poisoning, anemia, empyema, the sulfonamides, electro-encephalograph, toxemia of pregnancy.

3. Weed, L. H.: Some Tenets of Medical Education, *Bull. Johns Hopkins Hosp.* 45:203 (October) 1929.

4. Davison, W. C.: Qualities Which a Medical Student and Practitioner Should Have or Develop, *J. A. Am. M. Coll.* 16:278-281 (September) 1941.

Staff

Engaged in the teaching of students, the care of patients, and research are ten professors, one hundred and thirty-one associate and assistant professors, associates, instructors and assistants, ten residents, thirty-seven assistant residents and forty-eight interns—a total of two hundred and thirty-six.

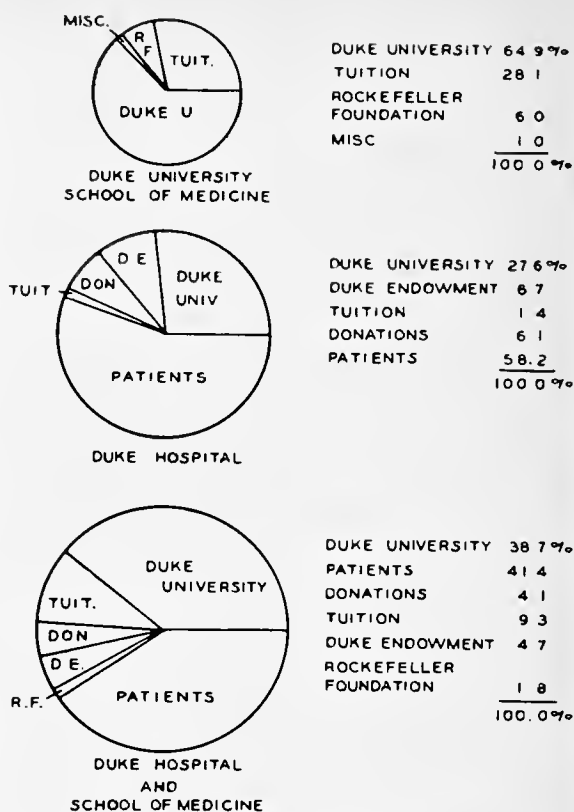
Costs

The present budget for the Hospital is \$940,000 and that of the School of Medicine is \$460,000—a total of \$1,400,000. For every dollar of the Hospital costs the patients pay 58 cents, and for every dollar of the School of Medicine expenses the students pay 28 cents, 30 per cent of them being assisted by the loan fund mentioned below. This clearly indicates the eleemosynary character of the institution (fig. 3).

Hospital Rates

During the first three years, over 90 per cent of the patients paid nothing. However, it was obvious that most of the patients or their friends, church, lodge, or county welfare department could afford at least part of the cost, if Duke Hospital furnished the balance. Therefore, in 1933 the Hospital adopted Mr. Duke's cooperative plan that the Duke Endowment and the counties share the charity load. Seventy-two per cent of the patients still pay less than cost, but by having them contribute in accordance with their means, Duke Hospital, with the same amount of money, now is helping 13,000 patients to be treated annually instead of giving complete charity care to 4,000⁽⁵⁾.

In 1933 the inclusive or flat rate also was adopted. This replaced with a single charge the usual room rate plus an indefinite number of extra expenses, and made it possible to estimate in advance the probable cost of hospitalization and to adjust the bill to the patient's resources. This policy of basing the rate upon the amount the patient can pay, rather than on the actual cost, has enabled many who under the former system unnecessarily were objects of charity to maintain their self-respect by contributing a fixed sum within their means. The patient has been greatly benefited; for there is no test or procedure needful to his medical care which is



REVENUE FROM ALL SOURCES 1940-1941 ESTIMATE

Fig. 3

not given him. Of importance at the present time is the experiment in intensive nursing being conducted on one of the new wards of the Hospital. If it is successful, the need for special nursing by those unable to afford its relatively high cost will be largely obviated. The fact that the room rates include these extras should be remembered when comparing the charges at Duke with those of other hospitals.

Hospital Care and Saving Associations

The Hospital Care and Saving Associations, through which large numbers of individuals make regular fixed payments into a common fund, have enabled self-supporting citizens to provide for hospital care in their budget. The Hospital Care Association, organized August 5, 1933, through the co-operation of the Watts and Duke Hospitals, and the Hospital Saving Association, sponsored by this Society and started March 11, 1935, with the aid of a grant from the Duke

5. Davison, W. C.: Medical and Hospital Facilities Available to Children in North Carolina, North Carolina M. J. 2:345 (July) 1941.

Endowment, have 62,000 and 147,500 members respectively.

Service to the State

In addition to the care of patients, the teaching of medical students, and research, the School, Hospital and the Duke Endowment are trying to help with the following six of the most pressing problems in North Carolina:

1. Neuropsychiatry: As Dr. Hubert B. Haywood has emphasized⁽⁶⁾, the state program in mental hygiene is of growing importance. The new department of neuropsychiatry at Duke already is cooperating with these plans, as well as filling the needs of the School and Hospital. The department is making every endeavor to be of service in the development of neuropsychiatry in the state.

2. Public health: More trained health officers are needed. The instruction in this field is an example of the growing cooperation between the University of North Carolina and Duke University. The Staff of the School of Public Health at Chapel Hill teaches the Duke medical students, and Duke University contributes to the budget of the University of North Carolina. A similar plan will be followed by the Bowman Gray School of Medicine of Wake Forest College.

3. The ratio of physicians to the population in North Carolina is only 55 per cent of the national ratio⁽⁷⁾. In some counties, the ratio of physicians to the population is as low as 1:5,164⁽⁸⁾, although 1:1,000 is considered necessary, especially in rural communities. During the last five years Duke graduates and former interns have located in thirty-seven towns in the state, and the number is increasing.

4. North Carolina, as well as other states, needs more general practitioners. A well-trained general practitioner can and does successfully treat over 80 per cent of disease, and as his volume enables him to treat his patients at a lower cost, the public needs and wants more general practitioners. The fact that 75 per cent of the present American medical graduates are or plan to be specialists who are needed by less than 20 per cent of the patients is an indication not

only of the overcrowding of the specialties, but also of the urgent need and wide-open opportunities for general practitioners. This plethora of specialists has caused such competition and crowding that in many North Carolina communities the financial rewards of general practitioners, with their reduced competition, are higher than those of specialists. All graduates, and especially those desiring to enter general practice, should spend at least two years in hospital work. This is required of all Duke graduates, and 80 per cent of them have spent more than this minimum. Duke Hospital is making a contribution to the training of general practitioners by adding to its "straight" internships in other fields a combined obstetric-pediatric internship of one year. Forty per cent of the present Duke graduates are in general practice⁽⁹⁾.

5. North Carolina needs more rural physicians. The ratio of physicians to the population ranges from 1:261 in an urban county to 1:5,164 in the country⁽⁸⁾. The area per physician in some rural communities is 203.8 square miles. Forty-three per cent of the population, but only 30 per cent of the physicians, are located in sixty-four predominantly rural counties⁽¹⁰⁾. To get country doctors, it must be possible for students from the rural communities to study medicine. The country lawyer, the country preacher, the country banker and business man, as the country doctor, do not go from cities; they come from the country⁽¹¹⁾. Graduates tend to return to the environment to which they are accustomed. For example, 83 per cent of the country students at one medical school returned to rural practice, and 80 per cent of the urban youths later practiced in the city⁽¹²⁾. Duke is helping with this problem through its loan funds.

Rural students rarely are wealthy or have resources for raising money. Probably the best way by which a sufficient number of country students can attend medical school is through loan funds, which can be repaid

9. Davison, W. C.: Opportunities in the Practice of Medicine, J. A. M. A. 115:2227 (December 21) 1940.

10. Rankin, W. S.: Third and Tenth Annual Reports of the Hospital Section of the Duke Endowment, Charlotte, N. C., 1927 and 1931.

11. Pusey, W. A.: The Trend in Medical and Nursing Services J. A. M. A. 82:1960 (June 14) 1924; Medical Education and Medical Service, J. A. M. A. 86:1501 (May 15) 1926.

12. Hyman, W. O.: Southern Medical Colleges Must Maintain Enrollment at Least at its Present Level, J. A. M. Coll. 12:301 (September) 1937; The Number and Distribution of Physicians in the Southern States as Bearing on the Policies of Southern Medical Colleges, South. M. J. 30:85 (January) 1937.

6. Haywood, H. B.: Mental Hygiene in North Carolina, North Carolina M. J. 2:139 (March) 1911.

7. Davison, W. C.: A Survey of Medical Education in the South. Address at the Inauguration of Oliver C. Carmichael as Chancellor of Vanderbilt University and a Symposium on Higher Education in the South, Nashville, Tenn., Vanderbilt University (February 4) 1938.

8. Cooper, G. M.: Ten Years in Maternity and Infancy Work in North Carolina, South. M. J. 31:437 (April) 1941.

over a period of years, thus becoming available for future students. Scholarships, such as those recently recommended for rural students by Governor Talmadge of Georgia, are splendid, but expensive, and do not create in graduates a healthy sense of obligation toward their community and university. The Angier B. Duke Memorial Loan Fund has enabled practically every Duke medical student to continue his education. During the past ten years, 195 medical students, or 30 per cent of the enrollment, have borrowed \$117,125 in amounts of \$150 to \$1500. Six per cent interest is charged. The usual length of these loans is twelve years—three years in medical school, three years in internships, and six years in installment repayment. These loans to medical students were made from 1930 to 1940, and it will be several years before most of them are due. During this period, \$31,899 has been repaid on the principal and \$25,169 was paid as interest.

6. The ratio of North Carolina hospital beds to population, like the ratio of physicians to population, is 55 per cent of the national average, indicating that the distribution of physicians and the distribution of hospitals are mutually dependent. Recent graduates rarely will practice and remain in a community without a hospital. The establishment and maintenance of rural hospitals in North and South Carolina, with the aid of the Duke Endowment, not only is improving medical service in the country, but also is attracting young medical graduates there. This is a contribution to medical education as well as to medical service.

Evaluation

The School of Medicine from the beginning has been approved as Class A by the Council on Medical Education and Hospitals of the American Medical Association, and is a member in good standing of the Association of American Medical Colleges. The Survey on April 20-22, 1935, by these two groups placed Duke among the best 25 per cent of the medical schools. Duke Hospital has been approved for internships and residences by the Council on Medical Education and Hospitals of the American Medical Association, and by the American College of Surgeons.

Summary

The statistics of these first ten years are listed in figures 1 and 2. All of us realize that the progress of the School and Hospital during their first ten years can be continued only by the close friendly cooperation of the faculty, house staff, students, medical profession and public, which has been maintained from the beginning. Every effort is being made toward that goal.

THE MEDICAL PROFESSION AND THE PROBLEM OF MENTAL DISORDER

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Of late years medical literature has been calling our attention afresh to the magnitude of the problem of mental disorder. The Chief of the United States Bureau of Vital Statistics informs us that over half of all available hospital beds in the nation are occupied by mental patients. He calls the problem of mental disorder "the greatest of all public health problems"⁽¹⁾. Dr. Franklin G. Ebaugh of the Colorado University School of Medicine states that, according to present figures, out of every twenty-five individuals reaching adulthood, one will be a chronic custodial problem, four will be severely neurotic, and eight will be handicapped through milder neurotic disturbances⁽²⁾. Dr. E. A. Strecker of the University of Pennsylvania School of Medicine estimates that 75 per cent of patients seen by the general practitioner during the first ten years of his practice are psychopathic cases⁽³⁾.

Competent authorities have told us that, with the prevailing trends towards mental illness, well over a million of the boys and

Read before the Second General Session, Medical Society of the State of North Carolina, Pinehurst, May 21, 1941.

1. Dunn, Halbert L.: Human Relations as a Public Health Problem. *Am. J. Public Health* 30:1318 (November) 1940.
2. Ebaugh, F. G.: The Care of the Psychiatric Patient in General Hospitals, *Bull. Am. Hosp. A., No. 207*, p. 16.
3. Strecker, E. A.: Psychiatric Education, *Mental Hygiene*, 14:797 (October) 1930.

girls now in our public schools will spend some time of their lives in mental hospitals⁽⁴⁾. Every year 750,000 individuals develop nervous breakdowns⁽²⁾. The statistical tables show that every year 100,000 of these are committed to mental hospitals. Without doubt many more would be admitted to state hospitals if there were room. Most state hospitals have a population in excess of capacity; in some states the excess of patients beyond capacity reaches as high as 40 per cent; the figure for the nation as a whole is 11 per cent over capacity. Dr. Ebaugh quotes a study which reveals that during the last fifty years the increase in institutional cases has been 300 times greater than that of our general population⁽²⁾. Several factors have to be weighed against these figures, but there seems no doubt that mental disorders are increasing⁽⁵⁾.

Most of the institutional mental cases are of course wards of the states. Let it not be supposed, however, that the state took these patients out of the hands of the medical profession. The profession was doing very little about the care of these unfortunates, and when state hospitals were founded the patients were brought from jails and prisons and poor-houses, or were found chained in cellars or barns of their own homes⁽⁶⁾. It might indeed be said that the state, taking these mental cases from the places I have named, put them into the care of the medical profession; for the staffs of state hospitals throughout the nation consist of physicians most of whom are members of their local medical societies and therefore a part of organized medicine. It is true that state hospitals are under the control of state or local boards, but the practical care and treatment of the patients is under the direct control of medical men. The point I make is that the problem of mental disorder is in medical hands, and that the failure to make progress in this field commensurate with progress in other branches of medicine is the failure of the medical profession. I raise the question as to whether our failure has not been due to lack of interest in this branch of our profession. Most of us are all too ready to get such patients into institutions and wash our hands of the whole matter.

The interest of lay groups in projects about which the medical profession is wide awake and their financial support of such projects is a matter of factual history. One is justified in the assumption that a greater concern on the part of the medical profession about the grave and growing problem of mental disorder would lead to more concern on the part of lay groups. This would mean larger appropriations on the part of legislatures for the care and treatment of the mentally sick. It would also influence benevolent individuals and foundations to contribute financial support to research projects directed towards a more adequate understanding of the factors involved in this tragic and baffling condition. I think I am correct in saying that modern psychiatry holds that mental diseases, in common with other diseases, have a cause, a beginning, and a course of development, and are just as susceptible to treatment and prevention as are physical diseases. But knowledge of etiology, course, cure and prevention lags far behind such knowledge in the field of general medicine. Since the time of Pasteur, Lister and Koch hundreds of millions of dollars have been spent in research work on the so-called physical diseases. As compared to this the amount spent in research in the field of mental disorder is a mere trifle. Dr. Nolan Lewis, Director of the Psychiatric Institute of New York, recently remarked that the Federal Government and a number of other sources have voted money for the study of cancer, syphilis, infantile paralysis, malaria and yellow fever, but dementia praecox, which destroys more people and careers than all the others added together, is not included in the average health program⁽⁷⁾. It would seem that in making progress in the field of mental disorder one of the first things to be done is to secure a more acute awareness of its magnitude and gravity on the part of the medical profession.

What practical things can members of the medical profession do in relation to the problem we are considering?

1. In the first place they can use their influence to get sufficient and adequately trained medical staffs in state hospitals—physicians who take such positions because they are genuinely interested in the practice of psychiatry. Not infrequently one hears the charge that too many of the men on state

4. Griffin, Laycock, and Line: *Mental Hygiene—A Manual for Teachers*, New York, American Book Co., 1940, p. 4.
5. Dayton, Neil A.: *New Facts on Mental Disease*, Baltimore, Charles C. Thomas, 1940, chap. 11.
6. Deutsch, Albert: *The Mentally Ill in America*, Garden City, N. Y., Doubleday, Doran and Co., (a) p. 44; (b) p. 115; (c) chap. 9.

7. Lewis, Nolan: *Mental Hygiene of the Senium*, *Mental Hygiene* 24:434 (July) 1940.

hospital staffs are there, not because they are interested in psychiatry, but because they have failed to make a living in private practice; or else they are young men just out of school who want a job for a year or two while they are looking around for a location in private practice. When salaries in state hospitals are 25 to 50 per cent below the average income of physicians in general it is easily conceivable that such a statement might be true. However, it is not true to the extent that even the medical profession commonly believes. On the staffs of state hospitals are large numbers of skillful medical men who work under great difficulties, enduring almost intolerable conditions and vile abuse, but continuing on year after year because of a deep and abiding interest in the victims of insanity and because of an insistent urge to try to find some way out of this quagmire into which civilization seems to be plunging itself.

2. Physicians may see that the medical profession is adequately represented on the boards of control of mental institutions. After all, mental disease is a medical problem and mental institutions are hospitals, and who can more efficiently serve on such boards than medical men? It surely would not be extravagant to suggest that at least a third of the members of such boards should be physicians. By such a provision the attention of the board would be maintained upon the chief function of the institution—namely, the treatment and cure of patients. Without this medical emphasis there is always grave danger that the institutions will be run as business or agricultural organizations and the patients forgotten or thought of only as necessary machinery to do the work. The men and women serving on such boards are usually citizens of high integrity and noble ideals, but because they lack the physician's viewpoint the center of their interest becomes focused in the administration of the institution rather than the curing of the sick. As a result of this I have known instances in some states where at the end of the fiscal year, in spite of the hospitals being much understaffed and their staffs much underpaid, boards have, with pride, turned back into the state treasury thousands of dollars. This is thought of as saving money for the state, but it is a mistaken sense of economy. It is difficult to get the non-medically minded citizen to see that in the long run he might save the state much more by spending this

money for the purpose for which it was appropriated—namely, to treat patients and get them well.

Perhaps I ought to go on to say that I have found superintendents of state hospitals in some states rather reluctant to have physicians on their managing boards. There are two reasons for this. One is that the physicians on the board sometimes ask embarrassing questions. The business men on the board ask questions which can often be answered by referring to the business manager's figures or estimates. The physician is likely to ask questions such as: What is being done by way of treatment? How many patients have recovered this year? What is being done to enable them to keep out of the hospital? What is the staff contributing towards an understanding of the causes and prevention of mental illness? Such questions, when asked by a physician, are at times embarrassing for a superintendent. When they are asked by a layman he can cover up the true state of affairs by elaborate phraseology.

Another reason why medical men are reluctantly received on the managing board of a state hospital is that they sometimes assume that because they are physicians they know all about the treatment of mental patients. The treatment of hostile, non-cooperative patients, whether it be for their delusions or depressions or for broken bones, skin infections, pneumonia or sore throats and the like, is hard and difficult work, taxing endurance and skill to the utmost. A doctor on a state hospital board who does not have the imagination and sympathy to realize this and who thinks that in a mental hospital the same techniques can be used and the same results attained as in his office or in a general hospital is likely to be a sore trial to the overworked state hospital staff.

But physicians serving on state hospital boards with sympathy and understanding of the problems involved can render a great service both to the patients and to the staff doctors. Professional mortality in state hospitals is high; doctors in these institutions, because of the large number of patients they have to care for, often become defeatists; they lose the urge to discover causes, to understand symptoms, to develop therapeutic approaches; and they tend to become mere job holders. Physicians on the boards of control can quietly exert influence to keep the overworked staff alive at the growing end; to remind them of the desperate need

to discover etiologies and ways of prevention, to enlarge understanding of symptomatology and to develop therapies. They can subtly and insistently keep alive in the atmosphere of the institution the demand of the medical profession that physicians holding such staff positions shall be psychiatrists and not mere wardens and pensioners.

3. A third approach to the problem of mental disorder can be that of the medical school. On this I say little, because medical schools are only now beginning to work out what aspects of psychiatry they shall include in the curriculum and how much time they shall give to it. But all those who are in touch with medical schools know that the teaching of psychiatry is a vastly more dynamic and practical thing than it was fifteen or even ten years ago. In our own state we have Duke University Medical School, with a fully developed and well-manned department of psychiatry under Dr. Lyman and Dr. Crispell. The Bowman Gray School of Medicine of Wake Forest College is in the process of setting up a strong department of psychiatry under Dr. John A. Rose. Dr. M. J. Rosenau has assured me that it is the purpose of the School of Public Health at Chapel Hill to see that public health officials are adequately trained in psychiatry to meet the mental health problems which form no small part of the job of doctors working in the city and county health departments. This increasing emphasis upon psychiatry as an important part of the education of physicians is indeed encouraging.

4. But more important than all I have so far mentioned relative to the medical profession's part in the prevention and cure of mental disorder, both in its grave and in its minor forms, is the part which the doctor in private practice might play. I am not unaware of the place of the specialist. No doubt all of us have had the comfort of calling to our aid, when faced by a difficult, obscure case, a man whose special training and accumulated experience make him competent to tell us what can be done, or, more important perhaps, what cannot be done in such a condition. But the tendency in medical practice today to call for a specialist whenever a difficulty arises is almost an addiction and may be chronically disastrous in undermining self-confidence and professional understanding and skill. Probably the general practitioner is apt to think of mental

disorder more than any other branch of medicine, as being a problem for a specialist, and he is all too prone not to try to understand it nor to do anything about it.

When I was a medical student in Chicago I went every morning along a street where an enterprising physician, perhaps not altogether ethical, had hung out a large sign announcing himself as a specialist in the diseases of men, women, and children. That was covering a lot of territory, but, after all, is that not what every physician in some measure is? Every one of the two million or more mentally ill persons in the United States⁽¹⁾ belongs in the category of men, women, and children whom doctors are treating. I do not recall ever examining an institutional patient who had not been treated by one or more doctors in private practice for some aspect or other of the trouble which ultimately led to the mental hospital. That a very large proportion of the 500,000 or more patients in mental institutions in the nation had been treated many times by a physician or many times by many physicians before being committed to institutions may not be the fault of the doctors, but certainly it is little to their credit. May it not be due to the fact that they were much concerned with diseases and not enough concerned with men, women and children?

In the *Journal of the American Medical Association* for April 12, 1941, it is estimated that 85 per cent of physicians are in general practice, and it is suggested that such a proportion is desirable. What can this 85 per cent of physicians do towards preventing the 750,000 mental breakdowns which occur during the year? First, they can stop making psychoneurotics. The mannerisms, dogmatisms, and indecisions of physicians, and their ignorance of personality development and of personality needs⁽²⁾ must be regarded as having major etiological importance in the production of the psychoneuroses. Second, they can take to their hearts more rapidly and more absorbingly the new emphasis in our profession that our business is to treat the patient and not merely his heart, or lungs, or genitalia. Third, they can accept *themselves* as their most important therapeutic agent. The doctor writes in his prescription a minim of this, a grain of that.

8. (a) Spock and Husckha: *The Psychological Aspects of Pediatric Practice*, in *The Practitioners Library of Medicine and Surgery*, vol. 13, p. 757.

(b) White, W. A.: *Medical Psychology*. Washington, Nervous and Mental Disease Pub. Co., 1931. (a) p. 1; (b) p. 135.

an ounce of something else, directions for mixing it and for taking it, and then finally he signs himself. It may well be that the last thing written on the prescription is the most active therapeutic ingredient. The amount of confidence that men, women, and children have in doctors is marvelous. The high estimate they place upon his knowledge and skill is amazing in the light of the actual facts as we know them. This confidence and devotion might well be used in larger measure for the maintenance of the mental health of the people. Sticking with a needle, cutting with a knife, ordering a drug are the easy ways of the doctor. They are of course important and their use must be continued and improved. But the hard way of personal interest and concern for the patient as a whole must play a larger part in the therapy of the office and of the general hospital if the medical profession is going to stem the increasing flow of their patients into mental institutions.

5. A fifth practical thing physicians can do relative to the problem of mental disorder is to cooperate more fully and more humbly with other professional groups. Dr. I. J. Wolf closes his autobiography with a quotation from Descartes: "If ever the human race is raised to its highest practical level intellectually, morally and physically, the science of medicine will perform that service." The medical profession has contributed and will continue to contribute much towards the advancement of the human race, but when it takes the arrogant attitude of Almightiness suggested by this quotation it is apt to become dictatorial and intolerant. Fortunately such an attitude is not the predominant one among doctors, and in all movements for the betterment of standards of living and human relations physicians are well represented. However, in proportion to their training and skill and the high place they occupy in community esteem doctors lag behind in willingness to do team work with other professions. Dr. A. E. Baker, President of the Tri-State Medical Association in 1940, made it the theme of his presidential address at the Richmond meeting to challenge the profession to larger community interest⁹. Not only may the doctor contribute much toward the pooling of skills with other professions in the effort to main-

tain conditions which make for mental health but he may also learn things which will make his own practices more effective. Granted that the physician is probably the most expensively and most intensively trained of all professional men today, yet the social case worker, the educator, the clergyman, the psychologist and other trained workers may teach him things which will make him more effective in combatting mental disorder. Particularly might the physician gain much by closer cooperation with the psychologist and educator, for often while being well trained in the normal functioning of the body he is entirely innocent of the normal functioning of the mind. While of necessity he has spent much time in the study of physiology, frequently he has not even been exposed to psychology.

Without doubt I could have interested you by reviewing the latest psychiatric thinking relative to etiology in mental disorders. Or I could have given you the statistics for and against the value of the later therapeutic methods in this field—pharmacological and electric shock treatments, prolonged narcosis, fever therapy in general paresis, hormones in involutional melancholia, the "total push" therapy in dementia praecox, the various forms of psychotherapy and so forth. And yet again we could have discussed together the trends in symptom interpretation, the attempts to understand why the mentally disordered person behaves the way he does. All these things should be discussed in general medical meetings. I am constantly urging upon state hospital staffs that they should seek frequent opportunities to present, both at the state meeting and at the meetings of the county medical societies adjacent to their institutions, the therapies they are using and the results they are securing. I have also urged the committee on mental hygiene of the State Medical Society to interest county medical societies in asking psychiatrists to present these subjects. Such presentations would serve the twofold purpose of keeping the general practitioners informed on progress and failure in psychiatry and of compelling the psychiatrist himself to evaluate his work. But this paper is more concerned with calling the attention of the medical profession to the fact that here is a field in which we are derelict and to state a faith that the doctor in general practice can do much to prevent this if he will work for the

9. Baker, A. E.: Good Citizenship and the Medical Profession, *South. Med. and Surg.* 102:99 (March) 1940.

mental health of his patient as persistently as he does for physical health, from the time the child draws its first breath⁽¹⁰⁾ or even before it is conceived.

I agree with those who regard the problem of mental health as the greatest of all our health problems. It seems to me that it is high time that the rank and file of the medical profession became acutely aware of its gravity and more seriously concerned in doing something about it. They can do much towards lifting the standards of mental hospitals and towards encouraging medical schools in their new interest in psychiatric instruction; they can cooperate with other professions in changing conditions which help precipitate mental breakdowns; but more than all this, by fearlessly regarding the maintenance of mental health as a medical responsibility, and accepting mental illness as something a doctor must study and treat in its incipient and early stages, they can in their own offices and on their own wards in general hospitals prevent and cure a substantial proportion of it.

I do not underestimate the value of the expert and the need of research in this difficult field. Perhaps there is no branch of medicine where at present the specialist and the research worker are more desperately needed. But we must not wait for them nor leave it all to them, any more than we do in other fields of medicine—and that, alas, is what we have been doing. Dr. Chauncey D. Leake reporting at the "Annual Congress on Medical Education" in February, 1941, says in effect that the general practitioner is preeminently a specialist in preventive medicine⁽¹¹⁾. If he can function as a specialist in preventive medicine in the field of mental disease, as I believe he effectively can, his contribution to the health of the nation will be enormous. For, after all, what shall it profit a man if he maintain all other health but lose his mind?

10. Strecker E. A.: *Beyond the Clinical Frontiers*, New York, W. W. Norton, 1940, p. 198.

11. Leake, Chauncey D., in *J. A. M. A.*, 116:1721 (April 12) 1941.

Interest in Humanity.—The good physician knows his patients through and through, and his knowledge is bought dearly. Time, sympathy, and understanding must be lavishly dispensed, but the reward is to be found in that personal bond which forms the greatest satisfaction of the practice of medicine. One of the essential qualities of the clinician is interest in humanity, for the secret of the care of the patient is in caring for the patient.—Francis W. Peabody: *Doctor and Patient*, New York, The Macmillan Co., 1939.

PUBLIC HEALTH AND NATIONAL DEFENSE

M. J. ROSENAU, M. D.

CHAPEL HILL

If we want to preserve our way of life, we must preserve our health. Health is clearly the first line of defense—in peace as well as in war. By health, I mean total health, physical and mental. One of the first symptoms of undernourishment is ill temper, which may express itself in asocial disturbance and violence. We need sturdy health for speed and efficiency in preparedness. The morale of an army riddled with disease cannot be good. That applies also to civilian population; for today it is the civilian population, as much as the troops, that takes the shock of war.

Battles are not always won by bravery alone. Germs make no distinction between friend and foe. They know no geographical boundaries. They don't understand "isolation" and "effort short of war" and "neutrality", and such terms.

The first World War would have been the first war in history in which there were fewer casualties from bacilli than from bullets if it had not been for the influenza epidemic. That spoiled our health record.

The disease of the soldier is a reflection of the disease of the population. There is an interchange of germs between military forces and civilian population. If we have measles in a community, it will surely get into camps or aboard ships. The same is true of diphtheria, venereal diseases and all the others. The action is also reversible, and infections in military forces are passed back into civilian population. It is this interchange of disease that must engage our attention; for it may be controlled and in many cases actually prevented.

In war as it is waged today there is unusual movement of large numbers of persons, both the military forces and the civilian population, over long distances. Troops from Australia fight in Africa. African soldiers will be used in Asia. There has never in the history of the world been such a migration of people as a result of war. This carries pestilence from one section of the world into another, and favors the interchange of dis-

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ease which is one of the accompaniments of nearly all wars. It breaches the barrier of geographic isolation. People go to foreign countries and there meet foreign parasites to which they are not accustomed and to which they are not immune.

If we want to preserve the health of both the civilian and military forces, we must have trained personnel and competent health organizations to do it. We have to take care lest our health organizations are disabled and our training centers disrupted. They must not be too seriously depleted to carry on their functions, for trained personnel in all phases of health activity must be on hand to fill the ranks. Even if there were no emergency there is at the present moment a need for trained personnel. I believe that if we disable our health organizations and neglect the good work that they are doing now, we will again have an increase in typhoid fever, in diphtheria, in tuberculosis and in all those other diseases which we have partially conquered.

In our state we have a forward looking health officer, Dr. Carl V. Reynolds. From the beginning of the defense program he has done his best to see that in the selective draft the health organizations will not be disrupted and disabled. We all know that the need is very great, and we are willing to see good men go out of our health organizations in order to meet the emergency that faces us. We are willing to make sacrifices, but there is a limit beyond which we can not go. If that limit is trespassed, we will have to fill our ranks with second and third rate men, and I know nothing more deadly to health organizations than mediocrity. We must hold the gains that we have made while making these sacrifices for the nation's good.

The last thought that I want to bring to your attention is the problem of the rejectees. The latest figures tell us that 40 per cent of those who have so far been examined under the Selective Service Act have been rejected on account of physical or mental unfitness.

There are 16,316,998 men between the ages of 21 and 35. That is a goodly number. If 40 per cent of these are unfit for military service, wholly or in part, it will mean that about six and a half million men in this age group have some disability. These disabilities have not been tabulated in order, but they are chiefly bad teeth, caries, tonsils, hernia, mental diseases of

various sorts, venereal diseases, of course, and other conditions, many of which are curable, many of which are preventable.

This situation is almost more frightening than war itself. Some six million or more of the flower of our male citizenry are physically unfit for military service. According to the latest figures that have come to my attention, approximately 5,000,000 have been classified in the Selective Service Act, and more than 600,000 have been examined. The selective service boards are classifying 20 per cent of those examined in Class Four, which means that they are totally disqualified for military service; 12 per cent in Class B, fit for limited military service only; and 68 per cent in Class A, qualified for general military service. When we add 13 per cent who are physically, mentally, morally or otherwise unfit, we have 40 per cent disqualified, leaving only 60 per cent available. This is a serious problem that confronts us. An enormous number out of our 130,000,000 population have been rejected for military service. We cannot simply reject them and throw them on the scrap heap. Many of them can and should be rehabilitated. The problem is to find the machinery by which we may salvage these individuals so as to make them physically fit, not for shooting muskets or flying planes, but fit to be whole citizens to do their work—whether in peace or in war. Many of them who have hernias may be stitched up; tonsils can be taken out; mental processes may be adjusted; teeth can be looked after. This rehabilitation can be done, whether it is done for the purpose of entering them into the ranks or not.

Some three different methods for doing this have been proposed. We have found the problem, but I am not sure that we have found the correct way in which it can be solved.

One suggestion is to appeal to the patriotism of these young men. Ask them to go to a doctor or dentist before they go to the selective service board and find out whether they have defects which can be corrected. If they have, ask them to have these things corrected, so that they will be ready to serve when they come to the board. That is an ideal way of doing it, but when I hear stories of men, who, in order to evade the draft, get venereal disease, which they think is not much worse than an ordinary cold, I am not sure that it would be effective. However,

the voluntary method is one possible approach to the subject.

The second way of accomplishing this is for the army to do it. When a man is found to have one of these remediable conditions, he would not be sent back to civilian life simply rejected. He would be admitted to the army and the condition corrected. The army would not like a job of that magnitude. They have problems and difficulties of their own. Perhaps it is too much to expect a military establishment to undertake such a program.

The third course appears at the present time to be the most feasible—namely, to have some agency organized in the civilian population to take charge of these men and rehabilitate them, whether they go back to military service or serve in civilian life. Defense industries are of equal importance to the armed forces.

We can be very much heartened by the thought that whether we meet this problem correctly or not—and of course it is of such magnitude that we will probably blunder—, much reconstructive work can be done. Whether or not this war flurry remains only a scare, such a situation quickens interest in public health. It brings home the lesson that many of our citizens are partly or wholly incapacitated, whether for war or peace, and it carries the message of hygiene and sanitation and good health to every individual in our broad country. When that is achieved, it will help to preserve and promote the health of our citizens. Their health is our first line of defense.

Abstract of Discussion

Captain J. Roy Norton (Fort Bragg): Dr. Rosenau gave us figures bearing out the fact that 40 per cent of men in the age group that we feel are the toughest and best in the whole population are not prepared to engage in warfare. The army will not have them if they have a non-effective rating. The public health workers can have a big part in seeing that soldiers are kept in the effective group.

It is just as important to keep civilian health at top peak as it is to keep strictly military forces at top strength. Military forces depend now more than ever on modern implements of warfare, and if the civilian population is not furnishing the things a soldier needs to fight with, our military forces are weakened.

Dr. Rosenau also spoke of the possibility around the camps of venereal disease and insanitation, and that is a tremendous problem. It is something the health department at home will have to look after. Fort Bragg, strictly speaking, is not in North Carolina. It is a Federal reservation and those of us at the Fort have no more authority a half mile outside than we do in South Carolina.

We will have to keep in mind the rehabilitation

of the 40 per cent rejected and also of all citizens not in the draft. We can not at this time relax in any way our health activities. They must be enlarged and intensified. That is a very, very important point that Dr. Rosenau brought out.

I dislike the way many military reservations have handled the problem of prostitution. The idea seems to be just to run the prostitutes from Fort Jackson to Fort Bragg and keep them milling back and forth so that they don't get too well acquainted. We have got to do something more fundamental in controlling venereal disease than that.

Dr. Rosenau brought up the matter of accepting men with defects into the army. This could be done, but right now the army has too big a job, and the rehabilitation of these men will have to be carried on by the civilian population. Another factor is that if the army does accept such persons it will cost them a great deal. If they have chronic trouble, the average cost to the Government is \$30,000.00.

I feel that those who are carrying on the work of health departments in this emergency are doing just as much as the best flyer in the United States Army. Let us keep that in mind.

TUMORS OF THE LARYNX AND HYPOPHARYNX

LOUIS H. CLERF, M. D.

PHILADELPHIA

The presence of a tumor in the larynx or in the hypopharynx—particularly in the latter—is often overlooked until the situation becomes rather critical from the patient's standpoint.

There are many types of tumor in the larynx. You are all familiar with them, and I will not take time to name them all. There are those which are not truly neoplastic, which consist of granulation tissue and are of inflammatory origin. Then there are the benign tumors—the fibromas, and the papillomas.

The papillomas are the tumors commonly found in children, and they recur quite frequently. They are not cancers, but are as great a threat to life as if they were. In time they completely obstruct the passage and ultimately cause asphyxiation.

Certain tumors may undergo changes. It is uncertain whether the papilloma becomes malignant or not. In an adult, a papilloma may recur several times after removal and finally clear up spontaneously. The mere presence of a papilloma in the larynx should not be presumed to be *prima facie* evidence that the patient will ultimately develop carcinoma.

Read before the Section on Ophthalmology and Otolaryngology, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941. Written from stenographic notes.

A chondroma is a cartilaginous tumor and is benign. It can be removed occasionally without sacrificing the larynx.

Then, of course, we have the great group of malignant tumors.

Diagnosis

How do we go about making a diagnosis of tumor of the larynx? It is like making a diagnosis of a lesion elsewhere. We would want a history, if one is available. The important thing is the symptoms, and, of course, the examination of the larynx.

The common symptom of a cord tumor is voice disturbance. Anyone who has some disturbance in his voice should be examined and a diagnosis made by exclusion. In some cases a direct diagnosis can not be made.

A public speaker, who talks a great deal, may first start with a huskiness after he has been speaking for a time; then the condition becomes more noticeable and he clears his throat frequently. Finally, he can not talk more than a few minutes without the huskiness, and as he keeps trying to talk he becomes hoarse. It is not necessary to carry out an extensive investigation to ascertain if he has syphilis or tuberculosis, because so far as the laryngeal lesion is concerned they both usually are ulcerated.

Many of the ulcerated lesions require a diagnosis by exclusion. That can be arrived at only on the basis of the history and physical examination, which includes mirror study of the larynx, and study of the nose, throat, larynx, and chest. The laryngeal lesion may still resemble any of several things. Our clinical pictures do not conform to the textbook pictures. The first carcinoma of the larynx you meet might not conform to the picture I would draw for you, because there are many factors that help to create clinical pictures. It is necessary to be in possession of considerable information in these obscure cases, and it is very important to see the larynx.

Examination of the Larynx

The best way to examine the larynx is with the aid of the laryngeal mirror. There are definite indications for direct laryngoscopy, but it is used chiefly to expose a larynx which cannot be examined by mirror and for biopsy. You do not get as much information by direct laryngoscopy as by mirror laryngoscopy. Secure some tissue or secretion and ascertain if there is a fixed

vocal cord. If there is, determine if you can whether it is of inflammatory, fibrotic or paralytic origin.

Mirror laryngoscopy is not too difficult. I think all medical students should be taught to do it. Interns should be taught to do it, not with the idea of having them take over the treatment of laryngeal disease, but so that they will not make a routine diagnosis of chronic hoarseness and treat a patient for that.

In the normal larynx, the vocal cords meet in the midline. When there is any disturbance with the larynx, the ordinary function of the vocal cords is disturbed, and there may be dysphonia.

Carcinoma of the Larynx

The one condition that must be recognized promptly is carcinoma of the larynx. I have examined a number of patients who have been hoarse for years, and found extensive carcinoma of the larynx. Quite often the case is inoperable, and there has been a metastasis to the lymph nodes of the neck. Prompt recognition in these cases is very important.

The majority of the neoplastic lesions in the larynx occur in the anterior portion.

In epiglottic lesions hoarseness is a late symptom, if it is a symptom at all, because the lesion does not involve the vocal cords. Voice disturbance results commonly from some interference with the activity of the vocal cords. Patients with such lesions complain of some sticking sensation or some obstruction in their throats. Secondary syphilis usually involves the greater part of the larynx, and if it reaches the tertiary stage, it may involve the vocal cord. These lesions will not cause hoarseness or voice disturbance until there is some interference with the vocal cords.

It is amazing how late these diagnoses are made. I recently went over a group of 291 cases of cancer of the larynx that I had treated surgically to ascertain the site of the lesion. Practically 250 out of 300 cases of cancer were vocal cord tumors. The majority of laryngeal lesions other than inflammatory processes occur in the anterior half of the larynx.

A small lesion of the edge of a vocal cord will produce voice disturbances, irrespective of its position.

Treatment: Surgical treatment for cancer of the larynx gives the best results which

can be secured by treatment of cancer anywhere in the body, with the exception of skin cancer. A lesion of the vocal cord can be removed without sacrificing the entire larynx. Occasionally there is a metastasis to the lymph nodes. Sometimes a subglottic lesion extends along the course of the cord for a considerable distance and manifests itself just beyond the edge of the cord. Those lesions are commonly extensive. Hoarseness is a late symptom.

Cricoidal carcinomas are rare, and about all my patients died. I do not operate on many of them any more.

Pharyngeal lesions, which occur on the posterior wall of the pharynx, are not common, but are difficult to combat. They do not produce symptoms early, and they are not amenable to irradiation therapy.

Irradiation therapy was given to one patient, and the carcinoma disappeared. About eleven months later the patient came back with an ulcerated lesion. Further irradiation therapy was attempted, but one treatment caused such a reaction that it was not used again. The side of the neck was opened from practically the angle of the jaw down well below the cricoid cartilage, and the posterior wall of the pharynx was removed. The patient is still alive. This type of patient can be helped a great deal by surgical treatment because it is not necessary to sacrifice the larynx. When metastasis to the cervical lymph nodes has occurred, that presents an entirely different problem. I emphasize the importance of examining the larynx early. That is imperative in all patients who have symptoms referable to the larynx.

Other Conditions in the Larynx

Paralysis of the larynx sometimes follows thyroidectomy. In examining the larynx, you should always note the motility to rule out paralysis. Early cancer of the larynx can be removed and one can expect 80 per cent non-recurrence in five years. Tuberculosis is a rather common laryngeal lesion and always has to be thought of in the diagnosis of hoarseness.

Summary

By the use of mirror laryngoscopy you can recognize all of the lesions in the larynx and hypopharynx which I have discussed. Mirror laryngoscopy is not difficult. Examine the

larynx, exhaust all the possibilities, and finally arrive at a diagnosis by exclusion.

Abstract of Discussion

Question: What strength cocaine do you use on your patients when administering an anesthetic?

Dr. Clerf: I used to use 2 per cent cocaine. I am now using 1 per cent pontocaine. I use an atomizer and blow one or two bulbs into the laryngeal cavity and have the patient hold it in the throat a few seconds and then expectorate. I repeat that. Then I get the camera ready, which takes two or three minutes. By that time the throat is anesthetized. Occasionally you will have to use a little more—only occasionally.

Of course, we cannot get a photograph of everybody's larynx. We have to use a large mirror. Some throats are so situated that we can only look around a corner. You must remember that nothing works instantaneously in the field of anesthesia. You have to give it time.

APPENDICITIS IN CHILDREN

T. M. WATSON, M. D.

GREENVILLE

According to Dr. Donnell Cobb's paper given before our State Society last May⁽¹⁾, appendicitis killed half as many people last year as did automobile accidents.

Early appendicitis is difficult to diagnose and easy to cure. Late appendicitis is easy to diagnose, and so hard to cure that the above figures remain true.

Appendicitis is rare in babies under 1 year of age. The anatomy may have something to do with this. The lumen of the appendix in the baby, where it joins the cecum, is funnel shaped and favors drainage. Furthermore, a fairly large percentage of babies these days get sterile or partially sterile feedings, and the intestinal flora is made up of Democratic organisms who want to get enough for themselves but do not feel that they must severely damage or kill the host in getting it. Further, constipation with accompanying fecal concretions is less common in the infant than in the older child. In the infant, the membrane at the lumen of the appendix is less likely to have become scarred; parasites are rarely present in the intestinal tracts of babies. After the period of infancy has passed, and the child has been turned loose to eat everything from dirt down to spinach, Republican bacteria become more numerous, and appendicitis becomes

¹ Read before the First General Session, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

1. Cobb, D. B.: Appendicitis: The Two P's and the Highest Mortality in the World, North Carolina M. J. 1:472 (September) 1940.

more common. These organisms get into the lumen of the appendix and try to get all they can, even though considerable damage to the host results. Finally, following upper respiratory infections, a fifth column of Nazi germs, such as streptococci and pneumococci, make their way into the partially obstructed lumen and start their blitzkrieg on the wall of the appendix, the circulation of which is already impaired by pressure from the impacted contents. Unless surgical treatment is instituted immediately general peritonitis with its bad prognosis ensues.

In the child from 3 to 10 years of age the lumen is small in proportion to the canal which it has to drain. Foreign bodies and other hard intestinal contents may scar the appendiceal mucosa and allow the pathogenic bacteria to enter. These set up inflammation with resulting edema, partial or total obstruction to drainage, and interference with blood supply. This leads to pus and demands surgical removal.

In the adult, when appendiceal inflammation begins, the omentum comes to the rescue and wraps itself around the inflamed area, so that if leakage does occur, a localized abscess rather than generalized peritonitis frequently results. In the child, however, the omentum is short and cannot function in walling off the infected area; therefore when the appendix ruptures, general peritonitis is the rule.

For the sake of brevity and also for lack of knowledge, I say very little about the pathology of appendicitis; the important thing to us is early diagnosis and prompt treatment.

Symptoms

In the young child the history given by the mother is often misleading. I have even had mothers try to lead me away from the abdomen, because of their dread of surgery. The small child cannot tell the mother nor the doctor where the pain is. Vomiting is a fairly constant symptom, but we must not wait for it. All of us have seen patients with acute appendicitis who had no sign of nausea. Abdominal pain is almost always present. This may be anywhere in the abdomen. At the beginning of the attack, it is usually in the epigastrium. This is also true of tenderness. After two to four hours it tends to localize in the right side of the abdomen about the level of the navel or near McBurney's point. Soon after this the muscle

begins to get rigid. Where the appendix is high, the tenderness and rigidity may be just below the liver and may never reach as far down as McBurney's point. In many cases there is never any muscle spasm. Constipation is the rule, but diarrhea does not rule out appendicitis. Last May we had a child 5 years old who had all the classical signs of appendicitis except constipation. She had had seven watery stools in twelve hours before coming to the hospital. At operation we found an acutely inflamed appendix bulging tightly at the tip, well on the way to rupture. Fever tells very little. Usually it varies from 99 F. to 101 F., but with dangerous appendiceal inflammation, the fever may be normal. We also have records of two cases with temperatures of 104 F. and above, in which appendicitis was the sole cause of the illness.

Even the complaint of pain is not always present. I remember a boy of 6 years who was brought to me on account of Vincent's infection of the gums. He had no fever, had not vomited, and complained of no abdominal pain. The mother stated that he had slept comfortably the night before. On examination the right rectus was very rigid, and tenderness at McBurney's point was acute. At operation two hours later an acutely inflamed appendix was removed. This case illustrates the importance of abdominal examination in every case regardless of the complaint.

Before any abdominal examination is made in a child, the bladder should be emptied, as a full bladder will make the muscle feel spastic. The examination must be gentle in order not to frighten the child. A good rule is to examine the abdomen of each patient before anything else is attempted, whether the complaint is earache or diarrhea, since any part of the body except the abdomen may be fairly satisfactorily examined with the patient resisting. The examination should begin with gentle palpation, starting in the lower left quadrant and proceeding up to the costal margin, across the epigastrium, and then from the right costal margin down toward the brim of the pelvis. In very early appendicitis tenderness and often rigidity will be found in the epigastrium or just below the liver. At this stage it is unusual for the patient to show any evidence of marked discomfort when fairly firm pressure is made at McBurney's point.

When the tip of the appendix is down near

the brim of the pelvis, the signs may suggest acute inflammation of the bladder.

In a few spoiled and frightened children, it may take an hour or more of patient effort before a satisfactory examination of the abdomen is accomplished. In the majority of cases it can be done more quickly and satisfactorily if the parents leave the room and shut the door. In a few cases it has been necessary to give a few whiffs of ether to control the resistance. If there is definite tenderness over any point where the appendix might lie, operation should not be postponed on account of the absence of muscle spasm, because this symptom may not appear until after leakage has begun.

If laboratory findings agree with physical findings, it is consoling. If physical findings point to appendicitis and the blood count is normal, the safest thing to do is to forget the blood count and operate. Postponing surgery because the blood count was not elevated has proved disastrous in too many cases. In the classical case of appendicitis the leukocyte count is between 10,000 and 15,000, but a count of 6,000 does not rule it out. In our experience, the differential gives more information than does the total count. The polymorphonuclear count is usually definitely elevated in appendicitis, even though the total is low. This helps to rule out typhoid fever, early measles, and other conditions which carry low total and high mononuclear counts. If the total and polymorphonuclear counts are exceptionally high—around 20,000 and 90 per cent respectively—pneumonia and pyelitis must be ruled out. This kind of a count does not eliminate appendicitis, however. We have had four cases in the past five years where appendicitis was the sole cause of such a count. The urine should be examined in all cases, since pyelitis and cystitis may give signs closely resembling those found in appendicitis. The onset in acute urinary tract infections is usually abrupt, with chill and high fever. Tenderness and muscle spasm are rare even in severe urinary tract infections. Even if the urine shows large amounts of pus, this does not rule out appendicitis. If physical signs strongly indicate appendicitis, the safest plan is to operate.

Pleurisy and early lobar pneumonia may be hard to differentiate from appendicitis. Physical and, if necessary, x-ray examinations of the chest, together with the blood findings, can determine fairly definitely

whether or not these conditions are present. In lobar pneumonia the white cell count is almost always between 25,000 and 40,000, with 85 to 90 per cent polymorphonuclears.

The onset of upper respiratory infections sometimes causes nausea and some tenderness in the epigastrium, but this does not tend to advance down the abdomen nor to localize.

Intussusception is not likely to be confused with appendicitis, since its onset is violent, with extreme shock, vomiting, and palpable tumor. Very soon after the onset the baby passes blood from the bowel.

Typhoid fever is rare now but has to be considered. It can be differentiated by the history of the onset, the leukopenia, and high mononuclear counts. Of course typhoid fever can be definitely diagnosed by blood and stool cultures, but since these take considerable time, the physical examination and blood counts are all that we have to use in differentiating it from appendicitis.

Mesenteric adenitis cannot be differentiated definitely from appendicitis, but since most of the adenitis is secondary to appendicitis, operation is not a serious mistake. When the appendix is removed, the adenitis subsides.

Early peritonitis due to pneumococcus and streptococcus must be remembered. Here, the abdominal signs are general, with moderate tenderness all over the abdomen, muscle spasm, and distention. The patient is usually profoundly toxic. The temperature is high, and the pulse rate exceedingly high. Still, in many cases, it is impossible to differentiate these types of peritonitis from that following a rupture of the appendix. Many authors think it is criminal to put in drains in these cases, but drainage, plus full doses of sulfathiazole, has proven highly satisfactory. It must be remembered that in children appendicitis is by far the most frequent inflammatory condition in the abdomen. In babies under one year it occurs infrequently, but it does occur. Our youngest patient to have gangrenous appendicitis was 24 hours old. (I might explain that the blood supply was cut off because the appendix was caught in a strangulated inguinal hernia.)

The prognosis in early cases is excellent if the appendix is removed before any leakage occurs. Dr. A. H. Montgomery states: "The younger the child, the poorer the out-

look." I disagree with this. If proper pre-operative and postoperative care is given, including fluids, salts, glucose, and, when needed, blood, these patients get along better than those more aged. Where peritonitis has already developed the prognosis is not so good, but with plenty of supportive treatment and large doses of sulfathiazole most of them get well. The great majority of the young patients who have been desperately ill with appendicitis or who have died of it gave histories of purgation with calomel or castor oil or both before the physician was consulted. It is hard to understand why a parent who would not take a dose of castor oil "for a share in the railroad" will force it down the throat of a helpless child.

We all know that certain cases of appendicitis will subside without operation, but none of us know which will recover and which will rupture. We also know that most of those who recover will eventually have it again. When a doctor satisfies himself that a patient has appendicitis and treats him conservatively, he is responsible for the outcome. Occasionally the parent refuses to allow the operation when it is advised. My plan has been and will be to retire from the case when operation is refused. In my humble opinion there is no excuse for conservatism in the treatment of appendicitis. Every doctor, in this enlightened age, knows that an ice bag on the abdominal wall can have no beneficial effect on the course of the disease. It only brings some relief of the pain, temporarily decreases muscle spasm, and masks the symptoms generally.

Once the diagnosis of the disease has been fairly well established the appendix should be removed immediately. One of my friends wrote me some months ago, "I think the greatest disgrace that can come to a hospital is to operate for appendicitis and find the appendix not inflamed." I would much prefer operating on 2 or 3 per cent uninflamed appendixes than to have 2 or 3 per cent of the cases terminate in "procrastination peritonitis".

In cases where the appendix has not ruptured, with light anesthesia, gentle handling of the bowel, and preoperative and postoperative parenteral fluids, when indicated, the morbidity is very slight and the mortality nil.

A PRACTICAL PLAN FOR THE USE OF VITAMIN K IN THE PREVENTION OF HEMORRHAGE IN THE NEWLY-BORN INFANT

ROBERT B. LAWSON, M. D.

CHAPEL HILL

During the past few years tremendous advances have been made in our knowledge concerning the prevention and treatment of hemorrhagic conditions in the newly-born infant. Since the general practitioner delivers a large proportion of the infants in North Carolina, it seems wise to review this work and to suggest a practical plan to reduce the incidence of hemorrhage in the first few days of life.

Although the incidence of true hemorrhagic disease of the newly-born is not well established, it is becoming more apparent that most of the hemorrhagic states in the neonatal period are closely allied and will be influenced by the same treatment. Hemorrhagic disease of the newly-born has been recognized for many years as a clinical entity, characterized by bleeding in an otherwise normal infant during the first few days of life. According to different observers, the incidence varies from 1.0 to 0.1 per cent of live births depending on the criteria used for diagnosis. The bleeding site is usually stated as being most commonly the gastrointestinal tract, with the umbilical cord, the skin, the nasal mucous membrane, and the vagina following in that order. The relation of intracranial hemorrhage to hemorrhagic disease will be considered in a moment. The bleeding may make its appearance at any time during the neonatal period, but is most commonly seen on the second to the fourth days of life.

This clinical picture has become much more understandable in recent years since Smith and his co-workers⁽¹⁾ were able to show that hemorrhagic disease is associated

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From the School of Public Health of the University of North Carolina and the Department of Pediatrics, Duke University School of Medicine and Duke Hospital.

2-methyl-1,4-naphthoquinone was supplied for this study by Eli Lilly & Co.

2-methyl-1,4-naphthoquinone-3-sodium sulfonate was supplied by Abbott Laboratories.

The author wishes to express his appreciation to Dr. D. B. Wyvell and Dr. W. S. Branning who have done so much of the laboratory work in the Duke series.

with a marked fall in the blood prothrombin level. They were also able to show that this fall is an exaggeration of a phenomenon that appears to take place in the blood of almost all newly-born infants. This work has been confirmed by several other workers, although there is not a complete agreement as to the relative importance of the fall in the prothrombin level itself and the change in its activity. Figure 1 illustrates the characteristic curve produced by the prothrombin clotting times of a series of newly-born infants. We obtained these curves by a micro-prothrombin clotting technique on ten apparently normal newly-born infants at the Strong Memorial Hospital in Rochester, New York⁽²⁾. It will be seen that although some infants showed an elevated prothrombin time shortly after birth, the majority were near the normal adult level of nineteen to twenty seconds. There is evident a rapid rise in the clotting times, reaching a maximum during the second and third days, indicating a falling prothrombin level in the blood. After reaching a peak, the clotting times become shorter and approach the normal value about the sixth day of life. This same type of curve has been shown to be almost constant by numerous workers. We have obtained approximately the same sort of curve in a more extensive study being carried out at the present time with Dr. Wyvell and Dr. Branning at Duke Hospital.

It will be seen that this peak coincides very well with the known incidence of hemorrhagic disease, and that there is a spontaneous recovery of the prothrombin clotting power of the blood just as there is frequently spontaneous recovery in mild hemorrhagic disease. In the bleeding infants which we have been able to follow, we have seen no case with a micro-prothrombin time of under eighty-five seconds, and the majority have shown micro-prothrombin times ranging from three minutes to over one hour.

Various theories have been advanced for this phenomenon, but it is not completely explained. It is known that the prothrombin level in the blood cannot be maintained without the absorption and utilization of an adequate supply of vitamin K. In the adult, hypoprothrombinemia rarely occurs from a

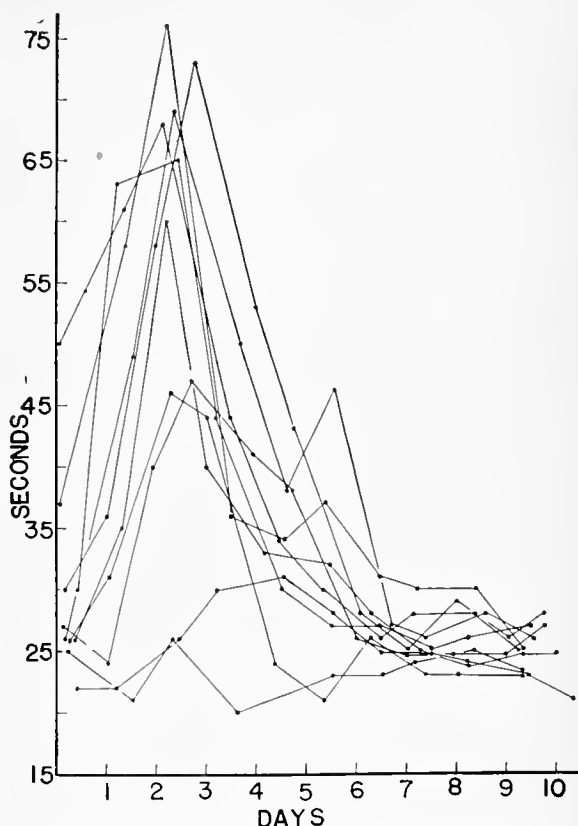


Fig. 1. Direct micro-prothrombin times on ten normal newly-born infants. Normal adult control was 19-20 seconds. (Reproduced from the *Journal of Pediatrics*⁽²⁾).

deficiency of vitamin K in the diet, but does occur from liver damage, and characteristically occurs in obstructive jaundice due to the lack of absorption of this fat-soluble vitamin from the intestine in the absence of bile salts. Although the newly-born's prothrombin clotting power is usually adequate at birth, it falls rapidly but recovers in a few days, presumably due to the action of the vitamin K absorbed from the gastro-intestinal tract where it has been synthesized by the intestinal bacteria. Since we occasionally see an infant with a very low prothrombin level who shows no evidence of bleeding, it is our impression that there must be some trauma during this period, however slight, to initiate bleeding.

In the past the occurrence of intracranial hemorrhage has not usually been considered to be a manifestation of hemorrhagic disease unless accompanied by bleeding from some other site, and not accompanied by trauma. This opinion, however, is no longer felt to be valid by the majority of investigators in

1. Brinkhous, K. M., Smith, H. P., and Warner, E. D.: Plasma Prothrombin Levels in Normal Infancy and in Hemorrhagic Disease of the Newborn, *Am. J. Med. Sc.* 193;175-480 (April) 1937.
2. Lawson, Robert B.: Treatment of Hypoprothrombinemia (Hemorrhagic Disease) of the Newborn Infant, *J. Ped.* 18;224-234 (February) 1941.

this field. We can now make a distinction between the massive intracranial hemorrhage associated with the tearing of a large blood vessel during a difficult delivery and the slow oozing type of hemorrhage in which an injury to a large vessel cannot be demonstrated.

Obviously the massive hemorrhages may occur as the result of birth trauma without a lowering of the infant's prothrombin activity, but the hemorrhage itself often causes a secondary loss of prothrombin so that bleeding from other sites may occur as a later manifestation. The oozing type of hemorrhage, on the other hand, does seem to be related to a primary lowering of blood prothrombin and the bleeding will usually stop with the administration of vitamin K. In the course of our investigation at Duke Hospital we have tested the prothrombin clotting activity of 191 infants. Of these 191 infants, 136 were born of unprotected mothers. Seven of the 136 infants showed evidence of intracranial hemorrhage, and four of these died. Four of the seven showed a very low prothrombin value, and of the other three, two had already been treated with vitamin K before the determination was made so that they also might have shown a low prothrombin level had they not been treated. This small series confirms our impression that intracranial hemorrhage is often associated with a low blood prothrombin, whether or not trauma is present in addition.

Since the synthesis of vitamin K, various substances with closely related chemical structures have been described which can be synthesized on a commercial scale very cheaply. The most commonly used substance is 2-methyl-1,4-naphthoquinone (Lilly's Proklot, Squibb's Thyloquinone, Abbott's Kayquinone, and Lederle's Quino-thrombin), which is oil soluble and is used in tablets, capsules, or oil solutions for oral administration, and in oil solution for intramuscular administration. Several related substances with increased water solubility have also been used and are now appearing commercially. Of these the most widely used are 2-methyl-1,4-naphthohydroquinone-3-sodium sulfonate (Abbott's Hykinone) and 2-methyl-4-amino-1-naphthol hydrochloride (Parke Davis's Synkamin).

Several observers have reported on the effect of these various substances in the pre-

vention and treatment of the hemorrhagic states of the newly-born infant. The development of micro-techniques for testing the prothrombin activity of the infant's blood has made these studies very satisfactory, for one can not only observe the clinical effect but can also judge, by the effect shown on the normally occurring hypoprothrombinemia, the effectiveness of any drug or plan of treatment. In attempting to prevent this fall in prothrombin activity one can give the pregnant mother a large amount of vitamin K before delivery or one can give the infant extra vitamin K immediately after birth.

The former method was first reported in 1939 by Hellman, Shettles, and Delfs^(3, 4), who were able to prevent a fall in the prothrombin level of infants by giving mothers natural vitamin K during the last month of pregnancy. Many other workers have done the same thing with very good results. 2-methyl-1,4-naphthoquinone has been given in tablet or capsule form in small doses over the last month of pregnancy, and larger doses have been given in oil by mouth after labor has started. Figure 2 shows the effect observed in a small series of cases in which 2-4 mg. of this substance were given at least six hours before delivery. It will be noted that although the normal level is not maintained consistently there is no marked elevation in the prothrombin times, especially where 4 mg. of the vitamin were given. In a larger series from Duke Hospital we have found essentially this same effect. Bohlender⁽⁵⁾ and his associates have just reported that they were able to prevent the usual lowering of the prothrombin activity by giving the mother an intravenous injection of 1 mg. of the water soluble 2-methyl-4-amino-1-naphthol hydrochloride as short a time as five minutes before delivery. Of course the administration so late in labor could not affect the infant's prothrombin level at birth, but it appears that some of the vitamin K passes directly into the infant's blood stream and then can act on the infant's liver to increase the prothrombin level in the course

3. Hellman, L. M. and Shettles, L. B.: Factors Influencing Plasma Prothrombin in the Newborn Infant—I: Prenatality and Vitamin K, *Bull. Johns Hopkins Hosp.* 65:138-141 (July) 1939.

4. Shettles, L. B., Delfs, E., and Hellman, L. M.: Factors Influencing Plasma Prothrombin in the Newborn Infant—II: Antepartum and Neonatal Ingestion of Vitamin K Concentrate, *Bull. Johns Hopkins Hosp.* 65:119-126 (November) 1939.

5. Bohlender, G. P., Rosenbaum, W. M., and Sage, E. C.: Antepartum Use of Vitamin K in the Prevention of Prothrombin Deficiency of the Newborn, *J. A. M. A.* 116:1763-1766 (April 19) 1941.

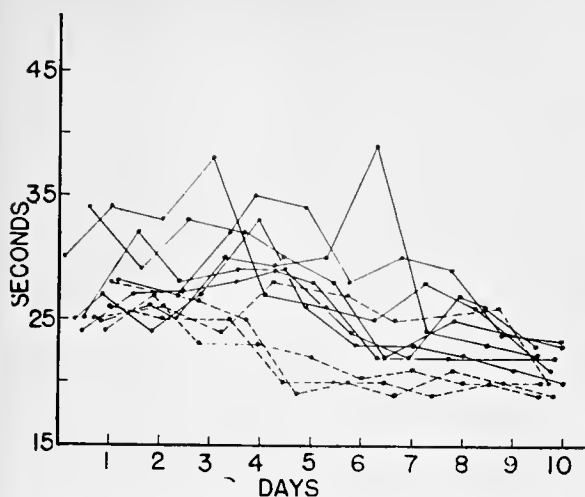


Fig. 2. Direct micro-prothrombin times of infants whose mothers received 2-methyl-1,4-naphthoquinone during labor. Solid lines—mothers received 2 mg. Broken lines—mothers received 4 mg. Normal adult control was 19-20 seconds. (Reproduced from the *Journal of Pediatrics*²).

of the next few hours. In the Duke series 55 mothers were treated with adequate oral doses of this substance before delivery, and no infant showed laboratory or clinical evidence of intracranial hemorrhage or hemorrhagic disease.

If the mother has not been treated one can observe the effect on the normal prothrombin curve of the administration of vitamin K-active substances to the infant. Figure 3 shows the effect of one intramuscular injection of 1 mg. of 2-methyl-1,4-naphthoquinone to the infant during the first few hours of life. It will be seen that there is a dramatic fall in the prothrombin times to the normal level. Many other workers have reported similar results⁽⁶⁾, and we have found essentially the same results in the Duke Hospital series in which the infants were given 3.2 mg. of the water soluble 2-methyl-1,4-naphthohydroquinone-3-sodium sulfonate (Abbott's Hykinone) by mouth. The use of a water soluble preparation for intramuscular injection is said to be equally effective. However, in our series, using another preparation, we have had four infants out of fifteen who failed to show a satisfactory response, so that more work will have to be done before this method can be evaluated.

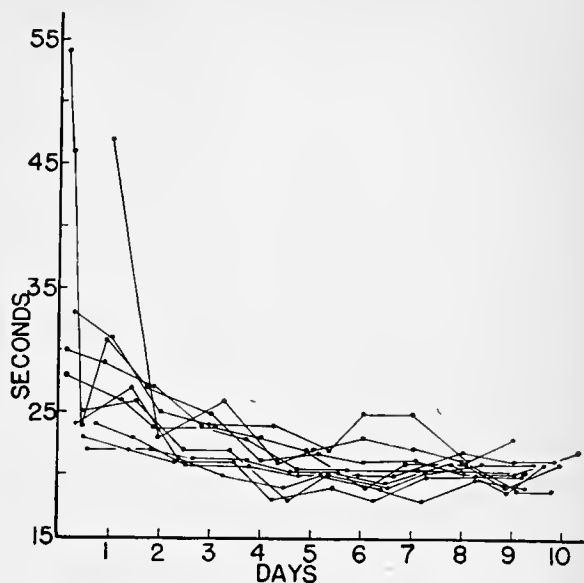


Fig. 3. Direct micro-prothrombin times of ten newly born infants who received 1 mg. of 2-methyl-1,4-naphthoquinone intramuscularly at the time of the first determination. (Reproduced from the *Journal of Pediatrics*²).

Injections of whole blood intramuscularly to prevent hemorrhagic disease have been used extensively for many years. There was some clinical evidence that this was effective, but a critical analysis of the reports leads us to believe that these cases were mild ones in which recovery would probably have taken place spontaneously. There is added laboratory proof, shown in Figure 4, indicating that intramuscular blood has little effect. Twenty cubic centimeters of blood from the infant's mother were injected into the infant's buttocks at the time the first prothrombin level was determined. It will be seen that there was little if any effect, and the prothrombin time, indicated by the broken line, became so elevated that we felt it necessary to administer vitamin K to this infant, which immediately brought the prothrombin time back to normal. We have seen another infant who developed clinical hemorrhagic disease on the twelfth day of life with an associated marked fall in the prothrombin level despite three blood transfusions during the previous week⁽²⁾.

Since we became interested in this problem we have seen sixteen infants with obvious clinical signs of hemorrhagic disease or intracranial hemorrhage associated with low prothrombin activity. We have seen potential hemorrhagic disease—that is, marked hypoprothrombinemia without evident bleeding—

6. Waddell, W. W., Jr., and Guerry, D. III: The Role of Vitamin K in the Etiology, Prevention, and Treatment of Hemorrhage in the Newborn Infant, *J. Ped.* 15:302-311 (December) 1939.

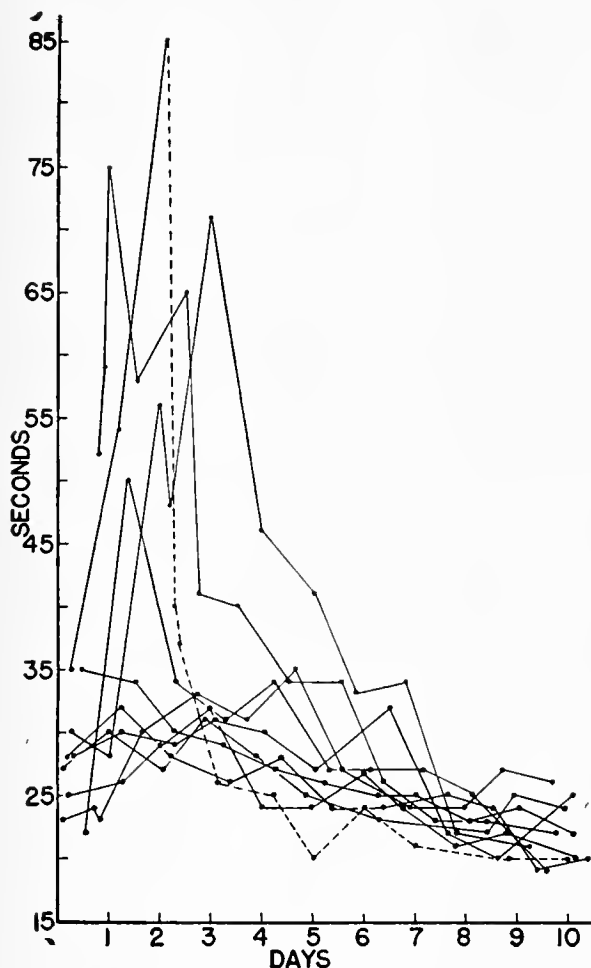


Fig. 4. Direct micro-prothrombin times on ten newly-born infants given 20 cc. of whole blood intramuscularly at the time of the first determination. Normal adult control was 19-20 seconds. Broken line represents course of infant after 1 mg. of 2-methyl-1,4-naphthoquinone was given. (Reproduced from the Journal of Pediatrics²).

in over twenty infants. From these cases and from the cases reported from other clinics we can say that the use of vitamin K in one of its forms is by far the most effective treatment for this condition. Blood transfusion will add prothrombin to the infant's blood stream and may cause a temporary remission in the bleeding or may even carry over a mild case until spontaneous recovery occurs. In a serious case, however, the effect of the added prothrombin from the transfused blood is only temporary and further bleeding is to be expected.

The effect of vitamin K in these bleeding infants is very dramatic. One milligram of 2-methyl-1,4-naphthoquinone in oil by mouth will begin to affect the prothrombin time as

early as two hours after administration. The intramuscular injection of this substance in oil is more delayed in its action but is equally effective over a period of six to ten hours. Bohlender⁽⁵⁾ states that the intravenous administration of a water soluble preparation (Synkamin) has been equally effective in less than four hours. Adequate studies of the intramuscular administration of the water soluble substances have not been reported.

Vitamin K preparations are now available commercially and are quite inexpensive so that they can be used for all patients. We suggest the following plan for the prevention and treatment of hypoprothrombinemia, hemorrhagic disease, and intracranial hemorrhage not associated with the tearing of a large blood vessel:

- 1) Since some infants are born with a markedly prolonged prothrombin time, and since intracranial hemorrhage is usually initiated during delivery, it is desirable to protect the infant *in utero* by treating the mother. Also, since one cannot estimate the time of onset or length of labor to any degree of accuracy, one should start treating the mother a month before the estimated date of confinement. We suggest, therefore, that every mother be given a daily dose of 1 mg. of 2-methyl-1,4-naphthoquinone menadione, in capsules or tablets beginning one month before the estimated date of confinement and continuing up to delivery.
- 2) If the mother is not seen until labor has begun, she should be given an immediate intravenous injection of 4 mg. of a water soluble preparation, or, if this is not available, 6 mg. of 2-methyl-1,4-naphthoquinone in oil. Tablets or capsules should not be used after labor has begun, since there may be some delay in absorption due to the time necessary for the liberation of the contents.
- 3) In order to make doubly sure of protection, since some mothers may not absorb the vitamin satisfactorily, every infant, and especially any infant delivered of an unprotected mother, should be given one dose of 1 mg. of a vitamin K-active substance orally, intramuscularly, or intravenously as soon as possible after delivery. One should use 2 mg. of the water soluble prepara-

tions, since they are not as potent as 2-methyl-1,4-naphthoquinone.

- 4) Every infant seen during the neonatal period with bleeding from any source should be given immediately 1 mg. of a vitamin K-active substance intravenously, orally, or intramuscularly. It is probably advisable to repeat this dosage about twelve hours later to afford added protection. Blood transfusion is advisable if the infant has lost sufficient blood to cause an anemia.

We feel that if such a plan is adopted by each practitioner, there will be a considerable decrease in the incidence of typical hemorrhagic disease and also a marked decrease in the oozing type of intracranial hemorrhage, which not only causes many deaths each year, but also leaves many infants with cerebral defect.

Abstract of Discussion

Dr. Northington (Charlotte): How many deaths from hemorrhagic disease have there been in North Carolina in the past year? Unless there has been a very considerable loss of life from this cause I would think that a blanket preventive measure of this kind would be at least open to question.

Let us look at both sides of this thing and consider the matter of proportion. Someone has said "Ability to consider things proportionately is the truest test of intellectuality."

Dr. Lawson: The percentage of children who die under one month of age, is the one factor in our death rates which has not been changed. Some 50 per cent die from prematurity, some 10 per cent from birth injury, and about 5 per cent from other related causes. Hemorrhagic diseases kill many of these; it is hard to state the exact figure.

Dr. Northington: How many per thousand?

Dr. Lawson: It has been estimated .1 to 1 per cent, depending on various statistics. However, it is not only hemorrhagic disease, as most of you men think of it, which we feel we are preventing by this routine use of vitamin K, but intracranial hemorrhage. Intracranial hemorrhage at birth does account for some 300 deaths a year in North Carolina. We feel that a large proportion of these cases were prevented in this series at Duke Hospital. Out of 130 unprotected mothers, 7 babies had intracranial hemorrhage, and four died. That is about a 3 per cent mortality. We believe these babies would have lived if they had been protected with vitamin K. We are not absolutely sure of it, doctor, but we think that is true.

As far as the administration of vitamin K to the mothers is concerned, we do not believe it should be done by injection. The most desirable procedure is to give it by tablet or capsule, one tablet a day for one month before delivery. Only in case that has not been done do we advise one injection of vitamin K intravenously.

As for reactions associated with it, several thousand mothers and babies have been treated up to this point with vitamin K active drugs. So far

no one has found any ill effects in either the mother or baby.

I believe I can quote Dr. Waddell of the University of Virginia, who in a long series of cases in which the mothers were treated prophylactically, had no case of hemorrhagic disease, and but one infant who died of a birth injury in something like 700 consecutive deliveries. That one baby had a positive tear across the tentorium.

We believe we will definitely cut down our infant mortality statistics, which are high in the neonatal period.

DELAYED RELAXATION OF TENDON REFLEXES AS AN AID IN THE DIAGNOSIS OF MYXEDEMA

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The delayed relaxation of tendon reflexes in myxedema is an aid in diagnosis which, though long familiar to clinicians, often is overlooked. Chaney⁽¹⁾ graphically recorded the relaxation time in a series of patients and noted normal relaxation in patients with low basal metabolic rates in conditions not definitely related to the thyroid, such as pituitary tumor and anorexia nervosa. We have confirmed his work and have studied the effect of edema on tendon reflexes in cases with normal and lowered basal metabolic rates.

Method

An expansile, soft gum rubber tube, connected to a sensitive tambour by ordinary rubber tubing, was strapped lightly around the belly of the muscle to be tested. Tracings were made on smoked paper attached to a rotating drum, and intervals of time were recorded simultaneously by a Jaquet timer (fig. 1). The tendon was struck with an ordinary rubber reflex hammer. Since the biceps tendon is one frequently tested clinically, and since the changes are readily felt here by the finger overlying the tendon, we chose this muscle. Tracings on the quadriceps muscle (patellar tendon) and gastroc-

From the Departments of Medicine and Physiology, Duke University School of Medicine, Durham. Submitted for publication May 30, 1941.

1. Chaney, William C.: Tendon Reflexes In Myxedema: a Valuable Aid in Diagnosis, J. A. M. A. 82:2013-2016, 1924.

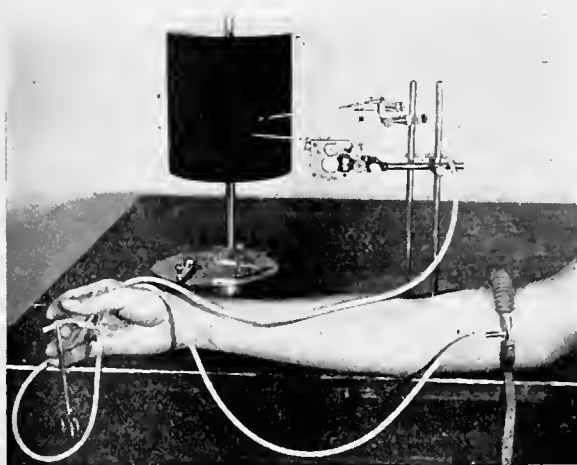


Fig. 1. Apparatus used to record biceps reflex.

nemius muscle (Achilles tendon) give similar results.

Controls consisted of patients with (1) low basal metabolic rates without edema (anorexia nervosa); (2) edema without low basal metabolic rates (venous obstruction, cardiac failure, hypoproteinemia); (3) edema with low metabolic rates due to other diseases (nephrosis). The fourth control group was made up of normal individuals. Tracings were made for comparison on patients with hyperthyroidism and on patients with myxedema after treatment.

Results

The results are recorded in figure 3, and a typical tracing is shown in figure 2. The relaxation time was measured from the peak of contraction to the return to the baseline, the figures representing the average of five trials.

In untreated patients with myxedema the relaxation time was prolonged uniformly. When the patient was treated with dessicated thyroid the relaxation time was shortened, occasionally showing marked change before the basal metabolic rate rose appreciably. In the control group the relaxation time was usually 0.24-0.47 seconds, as compared with a relaxation time of 0.67-1.00 seconds in the untreated myxedema group. Chaney⁽¹⁾ found 0.7-1.1 seconds in untreated myxedema, and 0.5 seconds in the controls. Readings slightly above normal but still below the myxedema level were obtained in one instance of nephrosis (0.57 seconds), and in one case of non-toxic goiter (0.65 seconds). One man with edema due to venous and lymphatic obstruction in the

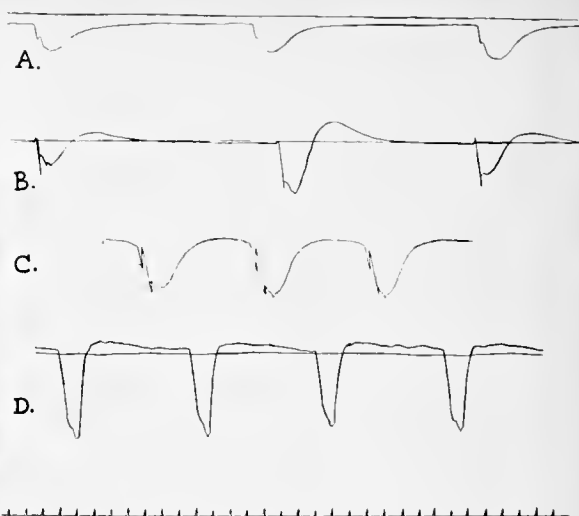


Fig. 2. Typical tracings. (a) Untreated myxedema. (b) Same case after treatment with thyroid. (c) Untreated myxedema. (d) Control—tuberculous pericarditis.

Time interval 0.2 seconds.

right arm, from malignancy in the axilla, gave a reading of 0.71 seconds in that arm, and 0.36 seconds in the left arm. The venous pressure in his left arm was equal to that in the right, but there was no edema. In hyperthyroidism the relaxation time was not decreased. The relaxation time was not related to the venous pressure, the level of the serum proteins, or the albumin or globulin fractions. The blood cholesterol, calcium, and phosphorus levels showed no relation to the relaxation time. A few tracings of the quadriceps tendon reaction were similar to those of the biceps, but the excursion was usually less and calculations were more difficult.

Conclusions

The method described is simpler than that of Chaney⁽¹⁾, but gave comparable results. Apparently the delay in the relaxation of the muscles is due to the specific myxedematous infiltration of tissue, and not to increase in fluid alone. The reaction is readily recognized by the unaided examining finger and may be an aid in diagnosis in obscure cases.

Summary

An increase in the relaxation time of muscles was found and graphically recorded in cases of myxedema. The reaction may be an aid in diagnosis, since no other condition tested gave uniformly similar results.

FIG. 3. TABLE OF RESULTS

Case	Age	Sex	Color	Diagnosis	Duration Years	Thyroid Dosage Mg./Day	Date	Relaxation Time Seconds	BMR %	Cholesterol Mg. %	Serum Proteins			Calcium phosphorus Mg. %	Ivrous Pressure mm. H ₂ O
											Total	Albumin	Globulin		
											Gm. %	Gm. %	Gm. %		
BJ	55	F	W	Myxedema	5	0	11/28/40	0.93	-24	404	6.1	3.6	2.5		85
						0	1/16/41	1.00	-39	434	5.9	2.9	3.0		
						64	2/27/41	0.47	-40	490					
						0	4/29/41	0.60	-32						
						64	5/24/41	0.33	-15	250	5.0	2.7	2.3	4.1	190
WP	63	M	W	Myxedema	13	0	10/17/40	0.77	-34	292	6.5	2.4	4.1		128
						128	4/26/41	0.12	-8						
JL	28	M	W	Myxedema	1	0	12/7/40	0.67	-28	360				8.9	1.5
						0	3/7/41	0.52	-21	338					
								*0.47							
IW	55	F	W	Myxedema	3	0	5/17/41	0.82	-29	450	7.2	3.8	3.4		
						128	5/24/41	0.60	-7	330					
ES	50	F	W	Myxedema, carcinoma of stomach	18	64	2/7/41	0.25	-10	258					
MB	18	F	W	Anorexia nervosa	1	0	1/24/41	0.42	-29	230	6.7	4.3	2.4	12.1	3.4
								*0.49							
GB	31	M	W	Sprue	6	0	3/1/41	0.34	-20		5.0				
MS	30	F	W	Psychosis	1.1	32	3/2/41	0.24	-22	147	6.8				
								*0.25							
EG	42	F	W	Pituitary tumor	12	0	3/10/41	0.36	-10	220					
PM	49	M	C	Pericarditis	0.5	0	2/22/41	0.30	-24	198	5.3	2.4	2.9		200
								*0.21							
MG	44	F	C	Hypopro- teinemia	1	0	2/20/41	0.37	-22	132	3.8	1.2	2.6	7.0	3.7
								*0.26							
AG	66	M	W	Carcinoma axilla with edema right arm. Normal left arm.	0.1	0	2/9/41	0.71			6.3	2.5	3.8		365
								0.36							345
SB	43	M	C	Nephrosis	0.3	0	1/16/41	0.41	-6	510	4.5	1.1	3.4		
ML	37	F	W	Nephrosis	0.8	0	2/7/41	0.57		880	4.6	0.9	3.7		
AB	59	F	W	Nephrosis	0.3	0	3/1/41	0.24	-8	908	4.9	1.2	3.7	7.4	5.6
MC	37	F	C	Nodular goiter	4	0	1/26/41	0.65	+23	148					
LM	50	F	C	Hyperty- roidism	0.2	0	12/14/40	0.26	+55	235				10.1	3.0
CT	53	F	W	Hyperty- roidism	0.1	0	1/25/41	0.35	+60	172					
BP	27	F	W	Hyperty- roidism	1	0	1/26/41	0.32	+35	220					
								*0.37							
RC	38	M	W	Normal			10/17/40	0.47							
FM	40	M	W	Normal			1/17/41	0.36							
GH	33	M	W	Normal			1/4/41	0.33							
HH	28	M	W	Normal			1/4/41	0.35							

* Indicates quadriceps muscle.

HEALTH PROBLEMS IN AN AREA SURROUNDING A LARGE MILITARY ESTABLISHMENT

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Cumberland County*

FAYETTEVILLE

The expansion of a military camp from five thousand officers and men to a total of sixty thousand over a period of approximately ten months has caused many health problems to arise.

The normal housing facilities were already crowded in Fayetteville at the beginning of the program. Housing facilities were not available for the officers' families who were transferred here in large numbers at about the time the building program got under way at Fort Bragg. Citizens were asked to double up and make all the room possible for the officers' families, not only in Fayetteville but in nearby towns as well. Next came the problem of housing and feeding the construction workers, whose numbers reached a peak of twenty-five thousand within about three months. They began moving in, parking and living in every conceivable place—tobacco barn apartments, goods boxes, discarded bus bodies, and even hearses, with a few luxurious trailer homes. Ninety per cent of these various and sundry quarters were without water supply or sewage disposal except the woods and streams which nature provided. Our only recourse under existing laws was to notify the property owners to provide water and sewage disposal facilities. In most cases this was done by the property owner, who in turn made a charge for water, lights and garbage disposal. In some places the property owner was compelled to take out ejection papers to get them off his property. When they moved from this property they would squat on some other nearby location. It would take about ten days to get them moved again, if the owner was lucky.

As the housing problem became more acute, with rents increasing rapidly, many tried cheaper lodging places, such as tents, huts, and trailers; they rented spaces to park, and formed what was unheard of before in Cumberland County—trailer camps. There are now some forty such camps in the county

having from four to seventy trailers and huts in each place. The majority of them are located in the vicinity of Fort Bragg, usually near a store or filling station. The county had no past experience with such camps; therefore, the Board of Health had no rules and regulations governing them. Rules and regulations were soon adopted requiring approved methods of sewage disposal, proper garbage collection and disposal, and a safe water supply. It was clear in the beginning that the majority of trailer camp operators and people living in them disregarded even elementary sanitation. Even with sanitary facilities provided in convenient locations it was practically impossible to keep them from using the nearby woods. Since about 50 per cent of the workers were not house broken, a very serious sanitary problem was created. Carpenters and laborers have been so scarce that it has been almost impossible to get first class privies built. Concrete slabs were not available and the old style wood bench "Chic Sale" type of privy was accepted. A few of our better camps were equipped with water carried sewage and shower baths; however, this was an exception and not the rule. After much educational work, frequent inspections and a few prosecutions in certain camping areas sanitation was partially assured.

The people living in these boom town trailer camps are usually there for only one reason: to make as much money as possible and to spend as little as possible. They take little pride in their living conditions, their eating facilities, or in clean private premises. Usually they do not care whether they have a privy convenient or not; the woods suit them perfectly.

As Fort Bragg expanded and houses for rent became scarce and dearer, a building boom came on and in a few months Fayetteville was referred to as a "boom town." The building inspector's office shows that a house a day has been completed in Fayetteville for the past eight months. During the first 16 days of May the Fayetteville building inspector issued a total of 56 permits for construction totaling \$136,030. This has more than doubled our job of septic tank supervision, and water and sewer connections.

The next problem was food establishments both near these trailer camps and in town. Since all available buildings were occupied it became necessary to construct cafes. Dur-

ing this construction period cafe operators wanted to open temporary cafes in tents and other such locations, which we have not allowed. All food establishments are required to meet the state law in full. Regardless of how well the camp personnel is fed, the men rush to our local cafes on pay day. For a week or ten days after pay day at the Post there is hardly standing room in the cafes. Many cafe owners have a man at the door and will only let in as many men as there are seats, while others crowd them in as long as possible. The number of cafes and other food establishments have tripled, and we still have the crowded conditions, especially on week ends.

The combination beer parlor and hot dog stand, which in most cases is a hangout for prostitutes, has been one of our biggest headaches; with the cooperation of the law enforcement officers who pick up the prostitutes on a vagrancy charge we have improved this situation somewhat, but it still exists. We are inspecting the worst places weekly, the better places not quite so often. Some of these places have been in court as often as twice in one month. Under our existing laws we have to reinspect them when requested by the owner and let them reopen if they meet the minimum requirements. If our laws were amended so that after being closed by court order the third time, the owner would be barred from operating a food establishment in North Carolina, we could make some badly needed improvements in this type of eating place.

Almost all cafes and other food establishments are serving three times as many people as they were designed to accommodate. This has made it necessary for us to force the owner to install dish washing machines, buy more dishes, enlarge kitchens, and hire more help, which necessitates frequent inspections, much education, and occasional prosecutions.

New meat markets have run the cafes a close second. Practically every grocery store of any size has added a market. Cumberland County now has about one hundred and fifty markets and cafes. This is an increase of nearly 200 per cent, and several more are under construction.

Another serious sanitation problem is the lack of public toilets. It is not possible for the cafes, hotels, and other businesses to keep clean toilets with all the additional load put on them by this sudden expansion. Alleys,

vacant lots, stairways, and almost any place in the dark are used as toilets. We now have plans and the appropriation for public toilet facilities. Because of the shortage of carpenters and laborers and because there is no WPA privy project, it is practically impossible to get sanitary privies built; therefore, we have had to accept privies of all sizes and shapes, with about one out of ten built to comply with plans. However, we see that each of them is fly proof and the owners are given to understand that as soon as labor is available they will be rebuilt to comply with plans and specifications.

Next comes the problem of grade A milk for all this increase in population. Our normal supply and demand was about 2000 gallons per day, including Fort Bragg. We are distributing about 8000 gallons daily now, all grade A products, and about 90 per cent Pasteurized. This has been done by the cooperation of plants and dairymen. The producers bought more cows and the plants more equipment. The plants and producers in other towns and counties have been very cooperative. We are now drawing a considerable amount of milk from these outside sources which comes into our plants labeled Grade A raw milk. Our milk supply has been on the Federal Honor Roll continuously for the past seven years. We now have arrangements made whereby we can take care of any additional expansion in our area with Grade A milk.

Problems are constantly being created in congested areas around military camps in the form of tent shows, carnivals and other fly-by-night types of entertainment. Such concessions will invariably try to sell food to the public without meeting the cafe law, fail to provide proper toilet facilities, and constitute the worst kind of nuisance during their entire stay. Often many prostitutes accompany this class of entertainment, and after the show has moved on an epidemic of syphilis and gonorrhea is left behind.

The problem of prostitutes is always great around army camps. There seem to be two schools of thought concerning the professional prostitute. The old idea, which some authorities still subscribe to, was that isolated districts, where the girls could be given routine medical examinations, telephone communication and police protection, were better than law enforcement and suppression of prostitution. However, I believe now that most authorities have agreed that suppres-

sion and law enforcement is the better method. In Cumberland County both methods have been tried. For some time an isolated district was tolerated and the prostitutes were required to be examined every two weeks. This was abandoned, and the girls were scattered over the county. Before the expansion of the camp when an isolated district was in operation it was estimated that approximately one hundred prostitutes were in the area. Since they have been scattered and the camp increased from five thousand to the present number, no one attempts to estimate the number of prostitutes in the county. Prostitutes can now be found on the various highways leading from Fayetteville. As a rule they do not stay long at one location. They can frequently be found occupying a house, about tourist camps, in hotels, on the streets, at the bus station, and in certain cafes. Very few, if any of them have medical examinations of any kind.

Several mass meetings have been called by the mayor to discuss the situation. Representatives from Fort Bragg, the State Board of Health, the American Social Hygiene Association, and the United States Public Health Service attended these meetings. A committee was appointed, which brought in recommendations advising the enforcement of all state and local laws in an effort to reduce the venereal disease rate and improve the morals of the county. Since this has been done the sheriff's office and the police department have made various raids and several arrests. Those placed in jail are examined for venereal disease. If found free of disease they are released; if found to be infected they are treated until non-infectious before being allowed to go back to their same profession. The army maintains several prophylactic stations in Fayetteville and on the reservation for both white and colored soldiers. The taxi drivers are the chief means of getting the men and women together. During the past few weeks the prostitutes have had more fear of the law than usual and are operating from wooded areas, changing locations frequently, the taxi drivers being the only ones informed as to their whereabouts. It is not infrequent for a professional prostitute to boast of thirty to fifty dates in one night. For several months the Health Department has received information from the post on all troops contracting a venereal disease. From this we have learned that one half of them apparent-

ly acquired their infection in other sections of the country. All of this makes a venereal disease control program a difficult task.

The Health Department has received hundreds of letters from health departments in this and other states concerning employees at Fort Bragg with syphilis, tuberculosis, and other diseases. An effort was made to locate many of these among the thirty-one thousand workmen and employees, but very few were found. The majority of these workmen have now completed their work at Fort Bragg and have gone home or transferred to other camps.

The crowded conditions have caused more cases of venereal disease to be discovered, owing to the increase in the number of domestic servants and food handlers examined, and to the Registrants' Serologic Survey. But on the other hand the overcrowded condition has made it very difficult to follow up delinquent cases. The cost of living jumped very rapidly and many people moved to cheaper places, leaving no forwarding address. To find a delinquent syphilitic prostitute is an exception and not the rule.

As the number of cafes, meat markets, and dairies trebled, so did the employees in these food handling establishments. This in turn trebled blood specimens for syphilis, smears for gonorrhea, and milk samples to be examined. The increase in population also caused more specimens to be sent to the local laboratory by private physicians. It has now become necessary to add an additional technician or continue to send one half of our specimens to the State Laboratory.

Many medical problems arise when so diversified a population from all sections of the country concentrates in one area. The question of indigent sick frequently arises. Several have become insane after living here a few months, having come from distances of many hundred miles. The trouble and expense incurred in transporting these individuals to their legal residence has been a definite problem. The school population in a number of places in the county has increased to such an extent that churches were used for school rooms. This increase has given us many more school children to examine and many more home visits for the nurses.

A definite effort has been made to render public health nursing service in the new trailer camp areas. Four offices have been established at strategic points for the vaccination of children against diphtheria and

smallpox, and of adults for typhoid fever. Nurses hold clinics in these areas weekly from 5 to 7 p. m., this being the most convenient time for the workmen. Nurses assigned to these areas visit the women and children in the camps in an effort to aid them in every way possible. A large number of immunizations have been done and several prenatal cases have been brought into our clinics. So far we have had no outbreak of disease, with the exception of a few cases of measles, mumps, and chickenpox. Most of the homes consist of cabins, tents, huts, or trailers, which are poorly ventilated but livable. In some instances as many as five people eat, sleep, and live in a one room cabin eight by twelve feet. Beds are improvised from studio couches, cots, double berths, etc. Electricity is usually available; water is used from buckets. The nurse discusses the importance of ventilation, screening, care of food, proper disposal of garbage, as well as general sanitation of the home and surroundings.

In areas around military establishments and other crowded areas the problems of the public health department are many and varied and can be taken care of only by cooperation of the health personnel and the people whom they serve.

Abstract of Discussion

Dr. H. W. Stevens (Jacksonville): Dr. Foster has given you a detailed summary of our problems. I say our problems, because his are an exact duplicate of mine. In defense areas at the present time, with the lack of facilities and cooperation we can only take care of the emergencies. A generalized health program in a county that has any army camp or cantonment can not be carried on at the present time unless you double or triple your staff, and I have found out in my case that that can not be done. There are not enough trained sanitarians and nurses to go around.

There are two or three problems in my county which, I think, do not exist in any other defense area: (1) I am in a large district composed of two counties that cover many square miles, and we only have twelve physicians practicing there, six in each county. Of the twelve, three are over age and do not care to leave their offices. Two out of the three have had heart attacks. The other physicians are so overworked that they do not care to handle one of our clinics. There are no physicians for venereal diseases or maternal care. They can make more money in twenty minutes in the office than with public health problems. (2) I was told the other day by Dr. Williams that the district I am in is the largest district in square miles and population east of the Mississippi without hospitalization. You gentlemen in counties that have a county or city hospital don't realize how lucky you are. The two hospitals nearest to my district are forty miles away. Another is fifty miles away. As you know,

county hospitals do not accept charity cases from another county unless they are paid for by the county. I believe that I am in one of the poorest counties in the state. (3) We do not have a sanitation project. We expect next year to overcome some of these problems. In a county which has never had a health program the schools still use an open type of well with a bucket. In a county with no sanitation project and no W. P. A. labor available for construction, you have to educate the people slowly to the fact that they need sanitary privies, sanitary water supply, horse and cow stables out of the city limit—all of which requires slow work.

We have an emergency. With 10,000 people in a town with a population of 950, they are sleeping in everything from tree tops down to houses. The Chairman of the Chamber of Commerce never comes down town without locking his house. If he did, somebody would be living in the house when he got back.

The department has already made a number of big plans and we are looking forward to overcoming all these problems.

Dr. A. H. Elliott (Wilmington): I am from Wilmington, and Fort Bragg isn't very far and Camp Davis is at our elbow. We are as busy as can be getting ready to start a shipyard. Up until now, we haven't had the problems Dr. Foster and Dr. Stevens spoke of. Instead of being encouraged, I am terribly discouraged. No doubt we will have a great many of those same problems.

Uncle Sam has been very good to us, so far as housing goes and so far as the sanitation program is concerned. Before the defense program started at all, they built quite an extensive white and colored housing project to take care of our badly sanitated home sites, and now the program is there, they are building nicely equipped and thoroughly modern quarters for non-commissioned officers from Camp Davis. They have already built extensive trailer camps for workers in the ship yard, and I understand the housing authorities have constructed plans to build a number of permanent homes for the workers in the shipyard.

One of the things that worries us most in summer is the beach business that we probably will get from Dr. Foster's and Dr. Stevens' territory. Normally our capacity at all the beaches is taken up each summer provided we have nice summer beach weather. If you add even a little bit more than normal, the eating and toilet facilities at the local beaches are congested. If you add the population of Camp Davis and Fort Bragg over the week-ends, plus the holiday population, I really don't know what we are going to do. Both of the incorporated beaches have already considerably increased their public toilet facilities. However, I am sure from what Dr. Foster said that they are going to have to increase them considerably more.

Our food handling proposition hasn't amounted to anything yet, because we have not had these people from Dr. Stevens' and Dr. Foster's territory. The Government has given us a couple of men. One spends practically all of his time trying to get all eating places in line before the army gets there.

As I see it now, the beach problem is our greatest one. Getting and keeping under control our eating places certainly will be quite a problem.

Colonel Keller (Fort Bragg): General Coburn, the Senior Medical Officer at Fort Bragg, intended to be here for this meeting, but was called away on urgent business to Washington, and I wish to express for General Coburn our appreciation of the cooperation which we have received from Dr. Foster and the Cumberland County Board of Health,

They certainly have been most helpful to us at Fort Bragg and we sincerely appreciate their efforts.

Dr. J. Roy Hege (Winston-Salem): During the last couple of weeks I have had the privilege of going through the defense areas in eastern North Carolina, and in a hurried way seeing some of their urgent problems.

It seems to me that there are three major problems in the defense areas. Perhaps first is the sanitation problem, especially in the small communities where the general sanitation is very poor. In the larger units the water and sewage facilities are adequate to take care of this influx of population of laborers, but out in the rural areas, in communities of 200 or less, the problem of housing nine or ten thousand laborers and protecting them from insanitation is tremendous. It requires laws that have teeth in them. You are not dealing with your stable population. You can't stop long enough to educate them. They are gone before that would be possible, so you have to set up some very stringent sanitary rules and crack down on those people—make examples of them and let them understand that a law is something to be respected and observed. Until we do that, we are headed for some bad publicity in the way of typhoid and malaria.

Eating places that grow up over night out in these remote sections are built flimsily with just as little expense as possible. We have to use a very firm hand with them.

In the larger communities, such as Fayetteville and Wilmington, it appears to me that the biggest problem is venereal disease. These larger groups of people coming in attract undesirable girls, who must be dealt with. I wish that we could handle them as easily as we can handle one of these boys who comes in and sets down his house or trailer and goes to the branch to get water and throws sewage on the surface. We go after him quickly. Girls are harder to catch.

I haven't said anything about malaria. We have thirteen trucks equipped with a foreman and three or four men, and we have 70,000 gallons of oil to spread in the next few months in areas where mosquitoes are breeding and malaria is likely to occur. We have a couple of anti-mosquito units connected with the division to help find out where mosquitoes breed. We hope that quinine will prevent serious outbreaks of malaria.

We have been able to persuade the contractors at the Marine Base at Paradise Point to insist that everyone be vaccinated against typhoid before he reports for work. Dr. Stephens vaccinated 1200 Saturday. Every individual employed will go first through the first aid station, where he will receive one dose of typhoid vaccine.

I want to ask Dr. Hamilton whether one dose of typhoid vaccine will protect a worker during the camp building program? The contractors would not like to have these men sick on the job from a typhoid sore arm, but they are willing to allow this first immunization dose if it will protect the workers for some time. We have been told by some authorities that one dose will protect you for at least a year if you have had three doses previously.

In summarizing, I think that our major problems in the defense areas—that is, caused by the defense area itself—are those three things: typhoid, caused, of course, by insanitary conditions; malaria, caused by environmental conditions; and the venereal diseases. I think if we can control those, the community can carry on a regular health program as they would if the defense area were not there.

Dr. John H. Hamilton (Raleigh): We, in Raleigh, for three years have been giving one dose of typhoid

vaccine, based on the best information of high officials in the Medical Corps. From all the tests that they have made, they state, the .1 cc. given intracutaneously will produce as high a degree of immunity, if not higher, for one year than three doses every three years.

Dr. R. M. Buie (Greensboro): I happened to be with the British Army during the other World War and it was their policy then to give one dose of anti-typhoid vaccine each year. It was a product of Burroughs and Wellcome. They gave ten minims each year. It was a pretty severe dose. What is the Army dose?

Colonel Keller (Fort Bragg): Three doses, the first one ½ cc. and the remaining doses 1 cc. of triple vaccine. Intradermal inoculations are being considered. They have not been officially accepted as yet. The preliminary reports are most encouraging.

Dr. C. C. Hudson (Greensboro): Col. Keller's last statement is based on a report of a meeting of the American Public Health Association either two or three years ago on some research work carried on at Johns Hopkins. If an individual has had three doses of typhoid vaccine at any time previously, one dose will give an immunity about as high as if he had three doses. It remains up for three or four months, and then begins to decline. This would afford enough protection for workers who had had vaccine before.

Dr. Williams: What is the dose?

Dr. Hudson: A little larger dose than is ordinarily given—enough to give some fever. Any fever will cause a jump in the immunity index if a person ever had typhoid vaccine before.

Dr. Foster: Since an epidemic occurred in a city in North Carolina from food handling last year, we have instituted typhoid vaccination of food handlers. We are relying upon one dose if they have had typhoid previously or have had typhoid vaccination at any time previously. We give one dose of 1 cc.

The Public Responsibility in the Fight Against Disease.—The results obtained by research in the attempt to make the world safe for humanity inspire greater efforts and justify hope of success. However, to accomplish the desired results there is needed, in addition to the superlative scientific work of many investigators, a better appreciation by the public that the fight against disease is the concern of every one. People must understand the hazards to health and life by infectious agents and accept responsibility for providing conditions which will prevent the transmission of communicable diseases. The individual who sneezes in the air condemns his fellowmen to suffering and losses they should be spared. The public must learn that to treat infecting agents without restraint is to establish disease and invite the possible penalty of an early commitment to the grave for eternity.—M. L. Crossley: *Recent Advances in Chemotherapy, Science*, 91: 370 (April 19) 1940.

Tuberculosis is a disease of long duration and may have many phases. It may be acute, but is more often chronic with periods of quiescence followed by exacerbations and so continues for many years. Patients discharged from the sanatorium should be considered as having completed only the first phase of treatment. Henry D. Chadwick, M.D., and Helen Evarts, Amer. Rev. of Tuber., March, 1940.

CARDIAC DECOMPENSATION IN CONGENITAL HEART DISEASE

(Report of Case)

DOROTHY B. WYVELL, M. D.

DURHAM

This patient is described because of the scarcity of case reports of cardiac decompensation in congenital heart disease. The patient was born at Duke Hospital on December 5, 1938, following a full term uneventful pregnancy and delivery. There was no cyanosis and he cried spontaneously. His weight at birth was 3050 Gm. The heart was not enlarged but there was a very soft systolic murmur. His mother was a 17 year old primipara with a negative Wassermann. Following discharge the boy was followed sporadically in the feeding clinic, and at the age of 6 months, when he was checked for circumcision, no murmur was heard. At 10 months, however, a loud, coarse systolic murmur was heard over the entire precordium.

On March 24, 1941, at 2 years of age, he was admitted to Duke Hospital with a complaint of sudden onset of swelling of his feet and ankles and early morning puffiness of his eyes which had appeared concurrently with an upper respiratory infection three weeks before. This was accompanied by an increase in the bluish hue of his lips that had been present since birth. He developed marked dyspnea and now slept propped up on two pillows.

Physical examination on admission showed a dyspneic cyanotic 2 year old colored boy with slight generalized edema. The temperature was 37.6 C. (98.6 F.), the pulse 152, respirations 26, blood pressure 92 systolic, 68 diastolic. The tonsils were large and injected and there was a cervical lymphadenopathy. The apical impulse was in the fifth interspace in the anterior axillary line. There was a systolic thrill and a loud rough apical systolic murmur transmitted to the axilla and to the back. Moist rales were heard at both lung bases. The liver extended 3 finger-breadths below the costal margin and was tender. There was shifting dullness in the flanks.

There were 5,800,000 red blood cells, with

a hemoglobin of 79 per cent, and 11,000 white blood cells. The urinalysis, Wassermann test, and tuberculin test were negative. Chest x-ray and fluoroscopy showed a tremendously enlarged heart which was not characteristic of any particular anomaly. An electrocardiogram showed a P-R interval of .16 seconds and an extreme right axis deviation. The total blood proteins were 6.0 Gm. per 100 cc.; the albumin 3.0 and the globulin 3.0. A blood culture was negative.

The patient was given 2 Gm. sulfathiazole immediately, and 0.3 Gm. every four hours for four days until the pharyngitis had subsided. He was digitalized slowly and given two intravenous injections of 0.5 cc. salyrgan at a three day interval. Under this regime his liver regressed, the basal rales disappeared, his pulse dropped to around 90 and he lost weight from 10.05 Kg. to 9.77 Kg. He was discharged on April 11, 1941, with limited activity, a normal child's diet and 0.15 Gm. digitalis daily.

For three weeks at home he remained comparatively well, but was not given any medication. On May 4, 1941, his dyspnea, edema, and cyanosis recurred, and three days later he was re-admitted in congestive heart failure with similar but more marked physical findings than those of his previous admission. His nonprotein nitrogen was now 40 mg. per 100 cc., and he had developed a 3 plus reaction for albumin. He was rapidly digitalized with 0.2 Gm. every 4 hours for six doses. His pulse returned to normal, his liver again regressed, and the rales disappeared; however, his course was steadily downward and he expired on the fifth hospital day. Unfortunately no autopsy was obtained, but we believe that the most probable anomaly was a tetralogy of Fallot.

Focal Infection and Hypertension. — When the chapter on focal infection is finally written, we shall find that we have been over-credulous in regard to this concept in the etiology of many chronic diseases. I refer particularly to the question of foci of infection as a cause of essential hypertension. There is no evidence that there is any real relationship between them, and this is just as true in regard to treatment. The removal of so-called foci of infection will not cure essential hypertension. This does not mean that foci of infection should not be removed from hypertensive or pre-hypertensive people, but only for the same purpose that they are removed in other people.—Edward Weiss: Renal Involvement in Hypertensive-Vascular Disease, Medical Annals of the District of Columbia, 9:420, December, 1940.

From the Department of Pediatrics, Duke University School of Medicine and Duke Hospital, Durham. Submitted for publication July 22, 1941.

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STAFF ROOM ORACLE

You must know him. There is one in every hospital. He sits in the staff room for an hour or two, enthroned in the most comfortable chair, and delivers weighty opinions on topics of the day. While the other doctors are periodically pulled out of the room by the clang of the telephone or the summons of an intern, the Oracle remains undisturbed. Somehow no one seems to be calling *him* on business.

First he polishes off the war. Explains what Churchill ought to do and what Hitler intends to do. He next settles problems on the Washington front. Tells General Marshall how the draft army ought to be organized and advises Secretary Knox to build more destroyers and fewer battleships. Having disposed of that, he gives some attention to matters medical.

And this is where we come in. First he tells his transient audience what is wrong with the A. M. A. After explaining how it can earn his favor, he turns his highpowered intellectual spotlight on the State Medical Society. He thinks it spends too much of his money on this, and gives too little atten-

tion to that. "Now if I were running The Medical Society of New Jersey, I'd . . ."

All right, Doctor, stop right there. You *are* running The Medical Society of New Jersey. You and your 4000 medical colleagues. If you have any views on the conduct of the Society's affairs, you have ample opportunity to express them where they can do the most good. Should your views concern fundamental policy, you can get up on your two legs at the next County meeting, and ask the local Society to instruct its Delegates. If you can persuade your fellow practitioners of the merit of your case, your Delegates will convey your ideas to the next meeting of the House. And if they are sound, ideas will be accepted by the House of Delegates, which after all, is composed of perfectly reasonable men, willing to listen to any proposal that might help the Society.

Too long a procedure, you say. True, the democratic process is often a bit cumbersome, but this is no time to start advocating parliamentary short-cuts in the name of "efficiency".

And if your idea concerns an administrative technique rather than a fundamental policy, you can call it to the attention of the executive officers of the Society even more swiftly.

Here is how: pull over a piece of stationery and reduce your thoughts to writing. Don't waste them on an ever-changing audience in your own little staff-room. Seek a wider forum—where your ideas have some chance of translation into action. Just summarize your plans for the improvement of the Society, your grievance against present procedures, or your suggestions for change, and send them to the Editor of the JOURNAL. We will publish your suggestions, so that your colleagues can read them and talk them over; and we will transmit them to the Society's officers as well.

Writing to the Editor is a good old American custom. Sometimes when you propound your ideas in the staff room, your brethren snicker: "Hire a hall!" And you *can* hire a hall, too. The pages of the JOURNAL are open to you for that purpose. It is your forum, Doctor; the floor is all yours. What were you about to say?—Editorial, J. M. Soc. New Jersey, 38:345 (July) 1941.

Read this, substitute "North Carolina" for New Jersey, and then—"if the cap fits, pray wear it a bit."

THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

On Thursday, September 11, the Bowman Gray School of Medicine of Wake Forest College formally opened its first year's session in its new quarters in Winston-Salem. Dean Carpenter was master of ceremonies. After a brief introductory talk by President Thurman Kitchin, addresses were made by Sanford Martin, Editor of the *Winston-Salem Journal and Sentinel*; Dr. Thomas T. Mackie, of the faculty of Columbia University; and Dr. Frederic C. Zaapfe, of Chicago, Secretary of the American Association of Medical Schools. No address consumed more than fifteen minutes; yet each was a model for such an occasion. Dr. Mackie's paper will be published in an early issue of the NORTH CAROLINA MEDICAL JOURNAL.

The expansion of this school into a complete four-year unit, after forty years' service as a two-year school, naturally raises the question in the minds of many as to the need for another four year medical school in North Carolina. The fact that as late as 1934 the president of the American Medical Association was advocating a reduction, rather than an increase in the number of medical graduates makes this question a pertinent one. Although the A. M. A. leaders may then have been unduly influenced by the New Deal policy of plowing under a third of our growing crops, and—to quote Will Rogers—trying to teach hogs birth control, the gradual increase of physicians, together with the almost stationary population of the country may justify such a policy for the nation as a whole. However, the situation in North Carolina is entirely different, as Dr. W. C. Davison, Dean of the Duke University School of Medicine, has shown. In an article published in the *Journal of the American Medical Association*⁽¹⁾, Dr. Davison points out that the ratio of physicians to population in North Carolina is less than half that of four Northern states (1 to 1284 for North Carolina, 1 to 629 for Illinois, Massachusetts, New York, and Pennsylvania), and but little more than half that of the national average. "Over half of the 241 counties in the United States with inadequate medical service are in the ten Southern states."⁽¹⁾ Furthermore, the trend

of doctors has been steadily to the city, until less than 10 per cent of modern graduates nowadays go to communities of less than 5,000, although 48 per cent of the population lives in these rural communities.

The need for training future practitioners for North Carolina and other Southern states, especially for the rural districts, is emphasized by the fact that the average age of physicians in rural counties is 52 years⁽²⁾. It would seem that the law of supply and demand would eventually correct this faulty distribution; but, as Dr. Davison has pointed out, it is the exception rather than the rule for a doctor brought up in the city to adjust himself to life in the country. In Dr. Davison's words, "The South will not get its physicians by migration; the students should be Southern, and to get country doctors it must be possible for students from the rural counties to study medicine."

That the Bowman Gray School of Medicine has started in the right direction is evidenced by an analysis of the home addresses of the 72 men enrolled in its first and second year classes. Of these, 57, or 79 per cent, are from North Carolina, and 65, or 90 per cent, are from Southern states; 28, or 39 per cent, are from rural communities. While it is not to be expected that all those from the country will return to rural districts to practice, it is probable that a fair proportion of them will do so. As Dr. Davison has said, "Graduates tend to return to the environment to which they are accustomed."

That the Bowman Gray School of Medicine is expected to furnish medical men for the rural districts of North Carolina and other Southern states does not mean that the training of these men will not be of the highest possible standard. With the swing of the pendulum from the worship of specialization to a recognition of the family doctor's indispensability, our educational leaders realize the importance of thorough training for general practice. It is the aim of those most interested in the curriculum of the new school to graduate a large proportion of alert, keen, self-reliant practitioners who will be capable of wearing worthily the grand old name of family doctor.

1. Davison, W. C.: Opportunities in the Practice of Medicine, *J. A. M. A.* 115:2227 (December 21) 1940.
2. Pusey, W. A.: Medical Education and Medical Service: Further Facts and Considerations, *J. A. M. A.* 86:1501 (May 15) 1926.

MEDICAL CARE FOR MILITARY AND CIVILIAN POPULATION

In its defense program, the government has called for a ratio of 6.8 doctors to every 1000 soldiers—slightly less than one physician to 150 men. This is five times the national average of doctors for civilian population. It means that in North Carolina the soldiers will have almost exactly nine times as many doctors as a corresponding number of civilians will have.

Does this mean that our draftees are less healthy than are civilians? Or that early active participation in the war is anticipated? In view of the rigid standards applied in selecting the soldiers, they should certainly be at least as hardy as civilians. And even if we are to enter the arena of battle soon, does not the "total war" practiced by Hitler kill and maim as many civilians as soldiers?

Over and over again are heard complaints from doctors who have gone from busy practices into the army. These complaints seem to stem mainly from the feeling that they are not really needed as doctors. One physician recently stated that he had been in the army four months, and had not yet been assigned to a real job. A "Medical Corps Reservist" from Camp Grant, Illinois, writing in *Medical Economics* for July, was shocked when his commanding officer "told me I might as well forget medicine for a year. Yet it accurately states the case in this temporary career as a drill master. It was the same with some 200 other medical officers called to duty at Camp Grant." A veteran surgeon, who has headed a surgical clinic for years, is allowed to use his surgical ability only in changing dressings. Another brilliant young internist is irked that he can not give a sulfonamide drug without permission from his superior officer. When a doctor has been trained from his intern days to exercise his own judgment, it is hard for him to be forced to ask authority to prescribe for a sick man.

It would seem that much of this criticism

from medical officers would not have arisen had there been enough for them to do. Yet the vacancies left in private practice by those who have gone into the army have caused many of the remaining civilian doctors to be greatly overworked. Although no lack of patriotism is intended, it seems reasonable to raise the question as to whether the present division of doctors between our military and civilian population is equitable or wise.

* * * *

SHALL THE AMERICAN MEDICAL ASSOCIATION BE DESTROYED?

In his address to the House of Delegates of the American Medical Association, Dr. Frank Lahey elaborated a statement made at the Pinehurst meeting of the North Carolina State Society: that in order to be fully appreciated, the American Medical Association would have to be destroyed. "We are all so adjusted to the aid, the resources and the helpful facilities of the Association that we tend, I believe, to make the mistake that is so often made by unappreciative husbands who think of their good wives much as they think of a comfortable piece of furniture. Not only does this thought, it seems to me, relate itself to those of us within medicine who benefit from its help and existence but, with even greater probability of the truth of the statement, by the lay public and by the government itself."

It is hard to take such a thought seriously; yet in the course of the A.M.A. trial, counsel for the Department of Justice bluntly said that if the A.M.A. were found guilty of conspiracy, the Government's next move would be an attempt to have it dissolved.

As long as we live in a democracy we have the right to free speech. In the Secretary's Message for July the words of Abraham Lincoln were quoted: "Public sentiment is everything. With public sentiment nothing can fail: without it nothing can succeed." Let us use our influence with our families and especially with our representatives to protest against the possibility of such a tragedy as the dissolution of the American Medical Association. And let us remember that the National Physicians' Committee is the *only* well organized division in the medical army for carrying on the particular kind of fighting needed here.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE UNIVERSITY SCHOOL OF MEDICINE

DR. J. LAMAR CALLAWAY: This patient was a 25 year old colored male admitted to the hospital because of chills and fever of seven weeks' duration. His past history is interesting in that he had had a penile lesion five years previously which was treated topically and disappeared in four days. For the past year and a half he had received regular antisyphilitic treatment consisting of alternating courses of intravenous and intramuscular injections at weekly intervals. Seven weeks prior to admission he received both an intravenous and an intramuscular injection and shortly thereafter developed a hard shaking chill followed by fever and associated with a cough productive of whitish sputum. There was no chest pain. He continued to run fever and have recurring chills, and he noticed that his urine appeared amber colored. However, he continued working and taking intravenous injections weekly for the following four weeks. Then, after receiving an intravenous and an intramuscular injection, he became weak and nauseated; he had another chill with fever, and developed a generalized skin eruption. He consulted his physician, who told him he had pneumonia and prescribed for him two large white tablets every four hours. He took these for three or four days, then stopped of his own accord because of anorexia, nausea, and vomiting. A second physician was called and treated him for kidney trouble. His urine continued to be amber in color, and he developed a bilateral flank pain which persisted and was followed by ankle edema. He voided five to six times daily, but in small amounts. There was no burning and no dysuria. His skin eruption gradually disappeared. His fever persisted, although he had had no chills for three weeks prior to admission. He also had a persistent moderate hacking non-productive cough, but there had been no jaundice or discoloration of his eyes or skin.

Physical examination revealed a well developed, adequately nourished colored male of about 25 who appeared gravely ill. His temperature was 39.2 C., his pulse 120, respirations 24, and blood pressure 110 systolic,

70 diastolic. His sensorium was slightly cloudy, but he responded rationally. His skin was essentially normal. There was generalized lymph node enlargement of moderate degree; the nodes were freely movable, discrete, and non-tender. They varied in size from a pea to an acorn, except in the right supraclavicular fossa, where a mass about 2½ cm. in diameter was felt. The extremities showed a moderate pitting edema of the ankles. The head was normal. The eyes showed no icterus. There were marked dental caries and pyorrhea. The respirations were moderately increased but approximately equal. The liver and splenic dullness was somewhat increased, and there was increased dullness at both bases posteriorly, especially on the right. There were moist rales in both axillae and at both bases; breath sounds were somewhat diminished over the bases. The heart was essentially negative, except for a tachycardia. The abdomen was moderately distended. The liver was palpable one hand's breadth below the right costal margin in the midclavicular line. It was smooth and markedly tender. The spleen was palpated two fingers' breadth below the left costal margin and was likewise tender. There was a small amount of fluid in the flank. There was moderate tenderness to fist percussion in both costovertebral angles, which was somewhat greater on the right. The remainder of the physical examination was essentially negative.

Accessory clinical findings revealed a hemoglobin of 65 per cent, 3,180,000 red blood cells, and 1,960 white blood cells. The differential count showed polymorphonuclear segmented forms 66 per cent, polymorphonuclear stabs 16 per cent, large lymphocytes 2 per cent, small lymphocytes 12 per cent, eosinophils 2 per cent, monocytes 2 per cent. The sedimentation rate was 14 mm. per hour. The Wassermann and Kahn reactions were positive. The urine was clear, reddish amber in color, with a specific gravity of 1.015, an acid reaction, no sugar, and a 3 plus reaction for albumin. The microscopic examination showed the urine to be loaded with granular casts and red blood cells, with 5 to 6 white blood cells per high power field. The benzidine reaction was positive. The urobilinogen was positive in a dilution up to 1 to 40. The stool examination was negative except for 2 per cent benzidine after ether extraction. Blood chemistry revealed a nonprotein nitrogen of

26 mg. per 100 cc., plasma chlorides 512 mg. per 100 cc., total proteins 5.3 Gm. per 100 cc., with an albumin-globulin ratio of 0.61. The van den Bergh reaction was not elevated. Repeated blood cultures were sterile. Blood agglutination tests including Widal, Proteus X2 and Proteus X19 were negative. Stool culture was negative for the typhoid-dysentery group. Repeated sputum examinations were negative for acid fast organisms, and no fusiform bacilli or spirochetes were seen by dark field examination. Sputum culture revealed alpha hemolytic streptococcus and non-hemolytic staphylococcus aureus. An x-ray of the chest showed what appeared to be fluid obliterating the right costophrenic sinus and extending upward to the level of the fourth rib in the anterior axillary line. A moderate increase in density was visualized throughout the lower half of the right lung field and in the left lower lobe. The heart appeared to be slightly enlarged. A liver function test revealed 4 per cent retention of bromsulfalein at the end of an hour. The galactose tolerance test showed 1.48 Gm. excreted in four hours. Electrocardiographic studies revealed sino-auricular tachycardia with levogram predominant. There was no indication of myocardial disease. Thoracocentesis of the right chest was done and 900 cc. of grossly bloody fluid with a specific gravity of 1.015 was removed. This fluid contained 60,000 red blood cells per cubic millimeter and 2600 white blood cells per cubic millimeter, of which 30 per cent were polymorphonuclears and 70 per cent mononuclear cells. No organisms were stained in this material and the culture was sterile. A lumbar puncture yielded 10 cc. of slightly turbid spinal fluid with an initial pressure of 300 mm. of water. The benzidine reaction was negative. Ninety-five white blood cells per cubic millimeter were present, of which 36 per cent were polymorphonuclears and 64 per cent were mononuclear cells. The spinal fluid sugar was 27 mg. per 100 cc., with a total protein of 260 mg. per 100 cc. The spinal fluid Wassermann was positive and the colloidal mastic test gave a paretic type curve.

The patient's course was progressively downhill. He ran a specific temperature which was never below 39 C. and on one occasion went above 40 C. On the sixth hospital day he developed a stiff neck with positive Kernig and Brudzinski's signs, and a positive Babinski on the left. Treatment con-

sisted of parenteral fluid with dextrose and all the accessory vitamins. In addition, he received daily 45 units of a concentrated liver extract intramuscularly and 10 cc. pentnucleotide intramuscularly. He received two transfusions of 400 cc. each of citrated blood, but despite all therapy he expired quietly on the ninth hospital day, approximately eight weeks after the onset of his illness.

Discussion

The data presented in this case are somewhat confusing. The patient is known to have had syphilis, and he had been receiving regular antisyphilitic treatment for eighteen months. The onset of his illness was with chills and fever, and might be thought to be due to heavy metal antisyphilitic treatment, but the fact that he continued taking arsenical injections for four weeks is against that premise.

His white cell count of 1960, with an essentially normal differential except for a mild shift to the left, is against heavy metal intoxication, for as a rule depression of the white count by either arsenic or bismuth results in granulocytopenia. The essentially normal sedimentation rate does not fit in with any acute infectious disease. The urine was loaded with casts, white blood cells, and red blood cells, and had a 3 plus reaction for albumin with a positive benzidine reaction; but the nonprotein nitrogen was 26 mg. per 100 cc. The kidney damage may be the result of infection, arsphenamine, or the sulfonamide which he apparently was taking. The fact that blood cultures and all agglutination studies were negative tends to rule out typhoid, Ricketts' disease, and other rare illnesses. The liver function test indicated liver damage, which might be due to heavy metals, sulfonamides, metastasis, infection, or one of the lymphoblastomas. The spinal fluid pressure was increased, with a total protein of 260 mg. per 100 cc. There were positive spinal fluid Wassermann and colloidal mastic tests; however, with a spinal fluid sugar of 27 mg. per 100 cc., 95 white blood cells with 36 per cent polymorphonuclears and 64 per cent mononuclear cells, and sterile fluid, tuberculosis becomes the most likely etiologic factor. There was a bilateral pneumonitis with sterile bloody fluid, and bloody pleural fluid indicates the probability of malignancy; in view of the infec-

tion, however, it still appears that tuberculosis is the most probable factor.

Although syphilis is obviously present, I do not believe that syphilis or therapy associated with it played any part in this man's illness. The lymphoblastomas must be kept in mind, as should malignancies and other infectious processes. However, I believe that disseminated hematogenous tuberculosis involving the lungs, liver, spleen, meninges, and body generally will best explain the entire disease process.

DR. F. M. HANES: I think it is well to point out here that the presence of a mass, presumably a lymph node, in the right supraclavicular fossa does not always indicate malignancy of the stomach, as this case well illustrates. Virchow's node, once thought to be indicative of metastasis from carcinoma of the stomach, may be due to a variety of conditions.

DR. D. T. SMITH: I agree with Dr. Callaway's analysis of this case that tuberculosis is the most likely diagnosis. However, if it is tuberculosis it must be a case of primary generalized tuberculosis. This would explain the enlargement of the superficial lymph nodes, particularly in the supraclavicular fossa. From the appearance of the x-ray there is no obvious enlargement of the tracheobronchial lymph nodes, for the primary infection was probably not in the lung. In view of the abdominal findings I think it is more likely that this is a case of primary tuberculosis, with the original infection entering through the intestines.

DR. O. C. HANSEN-PRUSS: A study of the bone marrow and peripheral blood indicates arrest of the maturation factor, most likely due to the infectious process.

DR. J. M. HENDRIX: At the outset we felt that this patient's condition might be explained on the basis of reaction to the heavy metals, but in view of the course of his disease and the spinal fluid findings, we felt that the best explanation would be that of hematogenous tuberculosis.

Clinical Diagnosis

1. Disseminated hematogenous tuberculosis involving the lungs, spleen, liver, lymph nodes, kidneys, etc.
2. Toxic depression of bone marrow due to tuberculous infection.

Pathological Discussion

DR. D. H. SPRUNT: In this case we have

an extensive disseminated miliary tuberculosis. Tubercles were found in the lungs, spleen, liver, thoracic and abdominal lymph nodes, kidneys, adrenals, diaphragm, and peritoneum. The spleen, liver, and abdominal nodes, both mesenteric and retroperitoneal, were extensively involved. The gastrointestinal tract itself, however, showed no involvement. At first we were inclined to agree with Dr. Smith that this was a case of primary infection through the intestines. Further study, however, revealed old calcified tubercles in the hilus nodes and an old primary lesion in the lungs. Microscopic preparations of the lungs showed extensive involvement of the vascular system which appears to be the origin of the disseminated tuberculosis. Terminally in this case there was a tuberculous pneumonia and meningitis.

Evidence of an acute anterior gonococcal urethritis was found, but no syphilitic lesions were seen.

Anatomical Diagnosis

1. Calcified tuberculous hilus lymph nodes.
2. Old primary tuberculosis of the lungs.
3. Miliary tubercles in lungs, liver, thoracic and abdominal lymph nodes, kidneys, adrenals, diaphragm, and peritoneum.
4. Tuberculous pneumonia and meningitis.
5. Pleural effusion, bilateral.
6. Hyperplasia of bone marrow.
7. Acute anterior gonococcal urethritis.

Testing of Ideas.—The critical testing of ideas, though a fundamental practice of the scientist, is a habit difficult for the average human being to adopt. An original idea is a brain-child and tends to be jealously cherished as such. To expose it to the cold light of reason takes a sort of Spartan courage that is too often undeveloped and yet is one of the essential attributes of any one who aspires to be called a real scientist. To be merely logical with facts selected for a purpose is much easier than to divest oneself of bias. Steadfast courage and a renunciation of false pride are required in the search for opposing rather than supporting evidence.—Eliot Blackwelder: *Science and Human Prospects*, Science, 93:360 (April 18) 1941.

The Layman's Conception of Science.—Failing to understand what the real scientist must be and what the essentials of science are, part of the public today is led to accept as science various elaborations of intuition, speculation and fancy, such as were much more widely current a few centuries ago. It is regrettable, but in a free country perhaps unpreventable, that the cloak of science should be donned and worn by faith-healers and other mystics who have no comprehension of the meaning of the term.—Eliot Blackwelder: *Science and Human Prospects*, Science, 93:360 (April 18) 1941.

CLINICO-PATHOLOGICAL
CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

DR. C. H. MORICLE (reading the clinical summary): C. M., a 23 year old colored female, was admitted to the hospital on June 28, 1941, with the complaint of pain in the lower back and abdomen and excessive vaginal bleeding.

The present illness began about a week before admission with cramp-like pain in the right lower quadrant, followed by nausea but no vomiting. These symptoms had begun five days after the beginning of her last menstrual period, which was still present. The periods usually lasted four days and had never been irregular. She had had some frequency and pain on urination and lately had had a moderate amount of leukorrhea. The history was otherwise negative.

Physical examination revealed a well developed and well nourished female. The head, neck and chest were normal. The blood pressure was 130 systolic and 80 diastolic. There was slight tenderness in the right lower quadrant of the abdomen but no rigidity or spasticity. Pelvic examination showed the cervix pointing anteriorly, with the fundus in the cul-de-sac. There was slight tenderness on the right and very little pain on manipulation of the cervix.

The red count was 4,190,000, the hemoglobin 13 Gm., and the white count 14,850, with 77 per cent polymorphonuclear cells and 23 per cent lymphocytes. The sedimentation rate on the fourth day after admission was 3 mm. and on the fifth day after admission, 40 mm. (Wintrobe).

The patient ran a slight fever each afternoon, the highest being 100.8 F. on the second day. She received sulfanilamide the first week of her stay in the hospital. The second week her temperature was normal, and at the end of the third week a laparotomy was done. Both tubes showed chronic inflammation, and the left ovary contained cysts. Both tubes, the left ovary and the appendix were removed. The pelvis was clear. The patient's postoperative course was uneventful for the first four days except for a moderate elevation of the pulse. On the night of the fourth postoperative day her abdomen became distended. The following morning the abdomen was still distended and Wan-

gansteen drainage was started with good results. No peristalsis was heard on auscultation of the abdomen. Enemas and prostigmine resulted in the passage of flatus. The patient was given glucose three times daily. The temperature gradually rose to 103.8 F. on the night of the sixth postoperative day. The next morning her temperature was down and the patient seemed to be better. She was given a transfusion that afternoon and expired an hour later.

Discussion

DR. E. L. GILBERT: This is an odd case. It seems to me that in any colored female who had had no irregular menses in the past and who suddenly started a prolonged menstruation an early incomplete abortion or a ruptured ectopic pregnancy would have to be considered. I assume that menstruation ceased prior to laparotomy. Another strange thing is that the patient had a white count of 14,000 with 77 per cent polymorphonuclears, and on the fourth day the sedimentation rate was normal. On the fifth day the sedimentation rate rose to 40 mm. This, to me, seems indicative of abscess formation somewhere. There is no mention of other blood counts or of any other sedimentation rates. Her uterus was certainly retrodisplaced. In view of the sedimentation rate of 40 mm., with no pain on manipulation of the cervix, it seems to me that we should seek other grounds of trouble; however, at operation there was found to be chronic salpingitis. The appendix, I presume, was taken out prophylactically. How much dependence we can put on the sedimentation rate is doubtful. A sedimentation test was not done in the two and one-half weeks that remained of her stay in the hospital. No other blood count was made. There is a question in my mind as to whether this patient should have been operated upon. Almost every patient coming in with such a history would have a moderate amount of leukorrhea. In the report there is no mention of the size of the tubes or of whether the tubes were patent. A small cyst of the ovary can be ruptured without removing the ovary. Anyone performing a pelvic operation should watch particularly for any possibility of infection on the fourth postoperative day. For a patient who passes the fourth postoperative day without any elevation of temperature or evidence of infection the prognosis is pretty good, but should the temperature

flare up on the fourth day the prognosis is serious. It is obvious that this patient on the fourth day developed a peritonitis. Where this peritonitis originated is another question: whether the stump of the appendix blew out or whether pus exuded from the tubes. If the appendix was removed prophylactically, I do not believe the appendiceal stump would blow out. You certainly could not expect infection from a cystic ovary. Therefore I believe that instead of chronic salpingitis there was a virulent infection in these tubes, some of which spread into the pelvis, producing a generalized peritonitis. Had a sedimentation test and a blood count been done accurately, I believe you would have found an increase in the sedimentation time and in the white cell count on the day prior to operation. On the seventh postoperative day the temperature was lower and the patient seemed to be better. There is no mention of the pulse. I believe that the pulse would have been much higher, and that the fall in temperature was probably due to exhaustion from an increased peritonitis. How old the blood was and what method was used I don't know. I doubt if the patient had a reaction from the transfusion during the injection. I think death was caused by a generalized peritonitis from a virulent infection in the tubes, which was probably aided by a reaction from the transfusion. It seems to me that the patient should have had some sulfonamide drug after operation. If she was much better on the seventh postoperative day, why was the transfusion given?

DR. C. H. MORICLE: Because we could not get the blood before.

DR. W. L. GRIMES: Did the blood match exactly? I feel certain that the transfusion had a good deal to do with the death. The patient may have had a pneumonia. There is nothing about the respiration and nothing about auscultation of the chest.

DR. C. H. MCCANTS: They were all negative, as far as we could find. The respirations are on the chart. I think Dr. Moricle left out a good deal of evidence that might be helpful because it was negative. At first I thought the patient had an ileus. There was not much fever. The abdomen was silent. There was not much reason for peritonitis. We could not figure out the source of infection.

DR. J. F. MARSHALL: What organism did

you think was producing this pelvic infection?

DR. E. L. GILBERT: There were no pelvic adhesions, and in my opinion that would rule out streptococcus infection; no abscess was found in the pelvis at the time of operation, so that would rule out staphylococcus infection. I think the infection was gonococcic in origin.

DR. J. F. MARSHALL: There is no mention of the wound. I presume that it was clean.

DR. C. H. MCCANTS: There is a note that some of the stitches were removed on the sixth postoperative day and the wound was probed to see if there was any infection. It was perfectly clean.

DR. J. F. MARSHALL: Was it probed deeply?

DR. C. H. MORICLE: Yes.

DR. C. H. MCCANTS: Dr. Frost, what do you think of the two sedimentation rates—one down one day and one up the next day—along with the very low-grade temperature?

DR. T. T. FROST: One sedimentation rate is obviously wrong, but I would be afraid to say which one.

DR. C. H. MCCANTS: Usually if the temperature does not flare up when a pelvic examination is done, you can say that the infection is quiet. This patient had a pelvic examination a few days before operation, with no rise in temperature, and the subsequent infection was rather surprising to us.

DR. J. F. MARSHALL: One condition which has not been mentioned is possible, but not likely—a pelvic phlebitis. It was rather early for this and there would probably be less distention and more pain in the pelvis and groin.

DR. FRED GARVEY: She might have had a thrombosis from the pelvic operation. This causes distention and pain in the abdomen, and death is sudden.

DR. S. S. MILES: Did she have any temperature rise from the transfusion, or any increase in pulse or a chill during the transfusion?

DR. C. H. MORICLE: No.

DR. J. F. MARSHALL: How did she die?

DR. C. H. MORICLE: She said she felt as if she were smothering to death.

DR. J. F. MARSHALL: Was there any pain in the chest?

DR. C. H. MORICLE: There was moderate

pain in the chest. A catheterized specimen of urine was very dark.

DR. E. L. GILBERT: I think it was dark before the transfusion.

Clinical Diagnosis

Transfusion reaction.

Peritonitis.

Dr. Gilbert's Diagnosis

Generalized peritonitis secondary to salpingitis.

Anatomical Diagnosis

Generalized peritonitis.

Chronic passive congestion.

Acute myocardial failure following transfusion.

Pathological Findings

DR. T. T. FROST: The patient had at the time of autopsy slight swelling and a very slight but definite pitting edema of the feet and ankles. The peritoneal cavity contained a moderate amount of yellowish pus, and the loops of intestine along both flanks were matted together. In the center the omentum lay loosely over free coils of intestine and there were a very few delicate fibrinous adhesions present. There were several loops of small intestine matted over the pelvic organs, and an inflammatory reaction was present throughout the entire pelvis. This arose from an abscess in the cul-de-sac on the left which communicated with the peritoneal cavity. The uterus was of normal size and contained a small amount of blood clot. The right pleural cavity contained 400 cc. of straw-colored fluid and the left 200 cc. The heart was normal in size. It was somewhat dilated and somewhat flabby. The lungs were purple and boggy, and when they were cut a considerable amount of red fluid escaped from them. The liver and the kidneys showed cloudy swelling. The spleen was rather small, pale and purple. Microscopically the section of the tube removed at operation showed an inflammatory process with considerable thickening of the walls. The folds of the mucosa were thickened and edematous. In the serosa there was edema with some fresh hemorrhage, and in the small vessels there was margination of the leukocytes and evidence of still active inflammation. The ovary simply had follicular cysts. The section of lung showed marked edema and severe passive congestion with large

numbers of "heart failure cells". No pneumonia was present. The kidneys showed none of the signs that you would expect to find in a transfusion reaction. There was edema in the papillae and marked distention of the blood vessels. The liver showed cloudy swelling. The heart showed edema and severe cloudy swelling. In certain areas there was fragmentation of the muscle and marked decrease in visibility of the striations.

This all adds up to show that this person had a considerable degree of heart failure long before she was given the transfusion. This weakened heart was suddenly dilated with 500 cc. of blood run into the veins. How long did it take to give the transfusion?

DR. C. H. MORICLE: She only had about 300 cc. given in about forty-five minutes.

DR. T. T. FROST: It was too much and given too fast. Saline or glucose or any other fluid would have had the same effect. The condition of the heart should always be determined before intravenous solutions and transfusions are given.

Squibb Stilbestrol Released For Sale

After two years of clinical trial, during which time over a hundred papers were published reporting studies in which it was used, Stilbestrol manufactured by E. R. Squibb & Sons, New York, is now offered for sale to the druggists of the land. Stilbestrol is a synthetic estrogen possessing the physiologic properties of estrogenic substances derived from natural sources. Chemically, it is alpha, alpha'-diethyl-4, 4'-stilbenediol. It is also called diethylstilbestrol.

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Striking therapeutic results have been obtained with estrogenic substances, whether natural or synthetic, in alleviating the vasomotor symptoms of the menopause. In proper dosage, they are also effective in treating gonorrheal vaginitis in children, senile vaginitis and kraurosis vulvae and pruritus vulvae of the menopause. It may also be useful in relieving painful engorgement of the breasts during suppression of lactation.

Squibb Stilbestrol is supplied in three forms:

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In common with other highly potent chemotherapeutic agents, Stilbestrol should be used only by or under supervision of a physician. Literature describing its dosage, indications and precautions is available to physicians upon request.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Raleigh

Malpractice: Physician not liable for honest mistake or error in making diagnosis and prescribing treatment if he utilizes reasonable skill and diligence as is ordinarily used in his profession.

This is a case in which two physicians were sued by a man and his wife to recover damages for malpractice of the defendants in wrongly and negligently diagnosing the woman plaintiff's pregnancy as a case of fibroid tumor of the uterus or an ovarian tumor. It was also alleged that the operation performed by the defendants was negligently done, inasmuch as a postoperative hernia resulted. According to the complaint the doctors, after their examination had been made—each acting separately in making it, and consulting thereafter together in regard to it—reported that the woman plaintiff was suffering from an ovarian tumor of rapid and malignant growth and that an immediate operation was necessary. When the incision in the abdomen was made so that visual proof of her condition was afforded, it was found that there was no tumor, but that instead she was between four and five months advanced in pregnancy. Upon the discovery of pregnancy at the time of the operation the surgeon closed the wound, the patient recovered from the operative procedure, and in due course was delivered of her child without any untoward incident. She afterwards, within the usual period, was restored to her normal health. Specifically, among other things, the plaintiffs alleged "that the defendants negligently performed the operation without possessing or exercising the knowledge and skill possessed by the ordinary physician and surgeon, and without possessing and exercising this knowledge did negligently and carelessly undertake to diagnose and determine the condition of the woman plaintiff; and did without possessing and exercising the skill and knowledge possessed and exercised by the ordinary physician and surgeon, carelessly, negligently, and erroneously diagnose and determine that the said feme plaintiff was suffering from an ovarian tumor of rapid growth, when in fact she was not so suffering, and that the defendants knew or should have known it by the exercise of the ordinary knowledge and skill possessed by the average physician and surgeon."

The defendants distinctly and circumstantially denied each and every allegation of negligence or malpractice, and the existence of any fact tending to show it, or to prove that they acted otherwise than the most careful and skillful physician or surgeon would have done under like circumstances. They also denied all right to damages, and this denial made up the issues submitted to the jury. The defendants claimed that the case was difficult to diagnose because of the presence of numerous abnormal findings. This claim was supported by medical experts, who were of the opinion that the defendants possessed and exercised the required knowledge and skill in connection with the case.

In the Superior Court a verdict was returned in favor of the defendants, whereupon the plaintiffs appealed to the Supreme Court.

The lower court was affirmed by the Supreme Court, and in substantiation of the judgment the Justice made the following statement: "A physician entitled to practice his profession, possessing the requisite qualifications and applying his skill and

judgment with due care, is not ordinarily liable for damages consequent upon an honest mistake or an error of judgment in making a diagnosis, in prescribing treatment, or in determining upon an operation, where there is reasonable doubt as to the nature of the physical conditions involved or as to what should have been done in accordance with recognized authority and good current practice. Whether errors of judgment will or will not make a physician liable in a given case depends not merely upon the fact that he may be ordinarily skillful as such but whether he has treated the case carefully and has employed in his treatment such reasonable skill and diligence as is ordinarily exercised in his profession. There is a fundamental difference in malpractice cases between mere errors of judgment and negligence in previously collecting data essential to a proper conclusion, or in subsequent conduct in the selection and use of instrumentalities with which the physician may execute his judgment. If he negligently omits to inform himself as to the facts and circumstances and injury results therefrom, then he is liable." (North Carolina Supreme Court, Vol. 177, p. 476. Decision rendered spring term 1919.)

If they could talk, Council Seals would say:

"When you see one of us on a package of medicine or food, it means first of all that the manufacturer thought enough of the product to be willing to have it and his claims carefully examined by a board of critical, unbiased experts . . . We're glad to tell you that this product was examined, that the manufacturer was willing to listen to criticisms and suggestions the Council made, that he signified his willingness to restrict his advertising claims to proved ones, and that he will keep the Council informed of any intended changes in product or claims . . . There may be other similar products as good as this one, but when you see us on a package, you know. Why guess, or why take someone's self-interested word? If the product is everything the manufacturer claims, why should he hesitate to submit it to the Council, for acceptance? Mead Johnson Products are Council-Accepted."

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For patients who are severely ill or with abnormal requirements of vitamin C such as are connected with surgical procedures, and for patients with poor utilization or faulty absorption of this vitamin, E. R. Squibb & Sons, New York, now supply Solution Sodium Ascorbate for intravenous administration. Made from the sodium salt of pure synthetic ascorbic acid (vitamin C), Solution Sodium Ascorbate contains per 1 cc. an amount equivalent to 100 mg. of ascorbic acid (2,000 U. S. P. XI units of vitamin C). It is supplied in 1-cc. ampules, packaged in boxes of six and 25.

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BULLETIN BOARD

PRESIDENT'S MESSAGE

There is no one who is more familiar with the history and traditions of our Society and who has done more for its welfare than Dr. Hubert Royster. Therefore any recommendations which he makes should carry tremendous weight.

With his permission I am publishing a letter recently received from him.

F. WEBB GRIFFITH, M. D.

September 25, 1941

Dr. F. Webb Griffith

President of the Medical Society of the State of N. C.
Asheville, N. C.

My dear Webb:

Ever since your induction into the office of President, it has been my intention to write to you. As a former president of the Society and present chairman of the surgical section, I take the liberty of making some suggestions in regard to the proceedings of our next meeting.

My first thought is that we should go back to our former custom of a full three-days' session of the Society itself. Before the arbitrary reduction to a two-day meeting (by what authority I know not), we met on Tuesday, Wednesday and Thursday of the week appointed, and held six full sessions with two night programs, giving ample opportunity for the reading of papers, the enjoyment of social features and the transaction of business. The abbreviation seems to have been brought about following the Asheville meeting in 1923. Since that date we have been allowed only two days for the meeting of the Society proper, if we can count Wednesday afternoon, which at our last annual session consumed exactly twenty-five minutes!

The most unfortunate result of our curtailed program is the neglect of the scientific sections. After all, the reading of papers with their discussions, is the paramount object of our Society and the one which should be stressed above any other. Under the present procedure only one-half day is allotted for each section, whereas two sessions of a half-day, morning and afternoon should be given to all of them. In former times, with a three-day meeting, this was easily accomplished. The two-session plan would encourage our own members (who must always be preferred to any outside talent) in greater numbers to contribute papers to their State Society. Many of these cannot now get on the Sectional programs under the one-session method. And remember that at the Greensboro meeting in 1915 a resolution was adopted, "that all invitations to physicians not members of this Society to appear upon the program in any meeting must be extended through the President!"

My second suggestion concerns the autonomy of the State Society. The Society is, and should be, supreme. All subsidiary organizations, specialty groups and independent associations, which may have a place on our programs, must conform to the order and rules of the parent Society, of which we are all component members. Without question,

you and the rest of us will welcome every single doctor in the state who may wish to participate in the work of our Society, and will co-operate in any way with every group connected with organized medicine. These separate groups, however, should understand that they have been formed from time to time under the auspices of the State Society and that their primary allegiance is to the mother organization.

The most important of our subsidiary units is the State Board of Health. No one could possibly have a higher regard and respect for this efficient department than I have. I am not of it, but I am for it, and with it in every move it makes, and has made, for the betterment of our state and the advancement of our profession. For the whole country its organization is a model. Public health and preventive medicine constitute a major part of the medical scene and engage the time of a large number of our Society members. The State Health Officers' Association, composed, I believe, entirely of the officials of the State Board of Health, and the county and district full-time health officers, for many years has held its meetings on Monday preceding the State Society session, consuming the whole day. There is also a section on public health and education on the program of the State Society. In addition there is provided a conjoint session of the State Board of Health with the State Society, which must have a place, taking up a considerable portion of time at a busy point in the Society's schedule.

There could be no valid objection to taking this overwhelming dose of public health medicine, unless it should interfere with the regular program of the inclusive State Society. The Health Officers' Association is free to meet where and when it pleases. Its Monday session has been fostered and welcomed by the officials of the larger organization and will be at all times, whether it convenes before or after the Society meeting. The only demurrer I should enter is that following their Monday meeting some, or many, of their members may leave and not take part in the Society proceedings. If they should meet after the Society meeting, a number might not remain to attend the Health Officers' meeting. If my opinion were asked, I would say frankly that the health officers could better hold their meeting at another time during the year and thereby secure a bigger attendance both for themselves and the State Medical Society.

As for the conjoint session, when the provision was enacted in 1893, it served a useful purpose. In the old days it furnished the only opportunity of conveying public health information to the doctors from all over the state and brought the organization into direct contact with the profession, and indirectly with the people. The time has gone long since when such a conference is necessary, what with the full-time local health officers, the Bulletin and other literature, and the helpful visits and talks of the State Health officials in every part of the commonwealth.

Without prejudice I offer the alternative of (1) doing away with the conjoint session or (2) combining it with the Section on Public Health and Education. In the latter event, the conjoint session could be held at the afternoon meeting of the health section, if the doubling of the time for section meetings be approved.

Please understand, Webb, that I have made these suggestions in no spirit of adverse criticism of any individuals or groups or associations, but solely "for the good of the order."

Cordially yours,
HUBERT A. ROYSTER, M.D.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

The State Board of Health, meeting in Raleigh, unanimously passed a resolution endorsing Dr. Carl V. Reynolds' effort to suppress the spread of venereal diseases through the suppression of prostitution.

The resolution, which declared Dr. Reynolds' efforts to represent the fixed policy of the Board on this subject, was recorded in the minutes as follows:

"Resolved, at the meeting of the State Board of Health in Raleigh, September 12, 1941, that the Board endorse the policy of its Secretary, Dr. Carl V. Reynolds, in his efforts to suppress venereal disease and prostitution not only around the military areas in North Carolina but also among the civilian population. Venereal disease control in North Carolina is a public health program and it is the fixed policy of the Board to give all of its efforts to the improvement of this situation. We feel that progress is being made, and we assure Dr. Reynolds of our full cooperation in the continuance of this program."

* * *

Law enforcement officials representing the eight North Carolina counties in the fall army maneuvers area met in Rockingham Monday, September 22, to hear an address by Professor Albert Coates, of Chapel Hill, Director of the Institute of Government.

The meeting was sponsored by the North Carolina State Board of Health. Public health laws in relation to the maneuvers area was the dominant theme.

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The August toll of 145 deaths from preventable accidents in North Carolina brought the total for the year so far to 1,144, as compared with 810 during the corresponding period of 1940, reports compiled by the State Board of Health's Division of Vital Statistics show. The increase for the month was 25. While a substantial majority of these deaths resulted from automobile accidents, August, with its torrid weather, was marked by 30 drownings in North Carolina, compared with 23 in August 1940. But the State so far this year has been free from deaths from airplane accidents.

The rising birth rate that has characterized 1941 has been accompanied by an increase in infant mortality. There were 431 such deaths reported in August, as compared with 385 in August last year, while births last month totaled 7,370, against 7,173 in August, 1940.

Maternal deaths, however, showed a continued decline, with 35 reported last month, as compared with 40 the corresponding month last year. Deaths resulting from diarrhea and enteritis have shown an increase this summer. There were 141 last month. The total for August, last year, was only 97.

August births brought the year's total in North Carolina so far to 56,623, an increase of 3,294 over the first eight months of 1940, during which time infant deaths totaled 3,520, an increase of 403 over the corresponding period in 1940, while maternal deaths showed a decline of 45.

No deaths occurred last month as the result of poliomyelitis, commonly known as infantile paralysis, but there were four deaths from tetanus, or lockjaw. Typhoid fever claimed one victim, compared with 6 in August, 1940, while there was one death from undulant fever. None occurred in August last year. But there was a sharp upturn in deaths from whooping-cough, the August, 1941, total having been 21, as compared with 6 a year ago. Malaria fatalities numbered 3. In August last year they numbered 11.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. B. F. Kingsbury, formerly Professor of Histology at Cornell University, will be Guest Professor in the Department of Anatomy for this year.

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The Josiah Macy Jr. Foundation has announced the continuation of a grant for research in the Department of Pharmacology to assist Dr. MacNider in his continued study of the aging process.

* * *

In order to correlate better the various medical activities at the University a new Division of Medical Sciences has been established. This Division, recommended by President Graham and approved by the Executive Board of Trustees, is composed of the School of Medicine, the Public Health School, the Tri-County Health Department and the University Health Service. Dr. W. R. Berryhill was appointed Dean of the School of Medicine and Chairman of the new Division.

* * *

Thirty students who completed the second year in medicine last June and who were awarded certificates in medicine have been transferred as follows:

Thomas H. Holmes of Weldon, N. C., and Ernest Yelton of Rutherfordton, N. C., to Cornell University.

John D. Hoyle, of Lawndale, N. C., and A. B. Dickson, of Raeford, N. C., to George Washington University.

Robert M. Hall, of Raleigh, and J. A. Taylor, of Oxford, N. C., to Harvard.

Miss Rowena Sidbury, of Wilmington, N. C., to Johns Hopkins.

Messrs. E. A. Erwin, of Laurinburg, N. C., Frank Nifong, of Winston-Salem, N. C., Ernest C. Richardson, of New Bern, N. C. and Clark Rodman, of Washington, N. C., to Jefferson Medical College, in Philadelphia.

Mr. Lawrence F. Cruze, of Powell Station, Tennessee and Mr. G. E. Gutmann, of Chapel Hill, N. C., to the University of Louisville.

To the University of Maryland: M. L. Aderholt, of Lexington, N. C., W. R. Jenkins of Franklin, N. C., Robt. F. Keadle, of Mapleville, Maryland and O. W. Williamson, from Wilmington, N. C.

Miss Lois Frayser, of Richmond, Virginia, to the University of Michigan.

Mr. J. W. McLean of Godwin, N. C., and Fred L. Tunick of Brooklyn, N. Y., to New York University.

To the University of Pennsylvania: Gus E. Forbes, of Greenville, N. C., Jack Hughes of Tabor City, N. C., Asa R. Parham, of Henderson, N. C., and C. L. Pressly, of Statesville, N. C.

Mr. R. G. Rosser, of Vass, N. C., to the Medical College of the State of South Carolina.

John B. Riggsbee, of Pittsboro, N. C., to Vanderbilt University.

To Washington University, in St. Louis: Leslie W. Rose, of Rocky Mount, N. C., Foyell P. Smith, of Lexington, N. C., C. G. Watkins, of Wilmington, N. C., and R. M. Wheeler, of Sanford, N. C.

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On September 2 and 3, 1941, Dr. William L. Fleming gave lectures on syphilis and pregnancy and congenital syphilis in the U. S. Public Health Service Postgraduate Training Course in the Management of Venereal Diseases at Hot Springs, Arkansas.

An intensive course in venereal disease control was conducted during the period September 15-19, 1941, at the School of Public Health by Drs. Wm. L. Fleming and John J. Wright. Guest speakers included Major Paul Padgett, Venereal Disease Control Officer at Fort Bragg; Dr. J. C. Knox, Director of the Division of Epidemiology of the N. C. State Board of Health, and Mr. Albert Coates, from the Institute of Government. This course was attended by ten sanitarians from health departments in various sections of the state. Following the course they were sent into the areas of the state used for maneuvers and troop recreation for special work in venereal disease control during the maneuvers of the First Army in North and South Carolina in October and November, 1941.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

The Bowman Gray School of Medicine of Wake Forest College began its first year of instruction on September 10, 1941. Seventy-two students were registered, 43 students in the first-year class and 29 in the second-year class. The formal opening exercises of the school were held in the amphitheater on the night of September 11, 1941. At that time, announcement was made of the establishment of the Bowman Gray Institute of Medical Research, which will operate as an integral part of the school. This establishment was made possible through the generosity of Mrs. Benjamin F. Bernard, who gave to the school a group of buildings occupying the southwest corner of the Bowman Gray Estate. Plans have been completed and work will begin immediately on transforming these buildings into research laboratories.

* * *

Dr. Tinsley R. Harrison, Professor of Medicine at the Bowman Gray School of Medicine of Wake Forest College, was the speaker for the annual postgraduate course in heart disease sponsored by the Kansas Medical Society and the Kansas Heart Association. The course was held in Emporia, September 29-October 2. Dr. Harrison is also scheduled to speak on October 24, at the New York Academy of Medicine Annual Graduate Fortnight. His subject will be "Effects of Renal Extracts on Hypertension".

* * *

Dr. Howard Bradshaw, Professor of Surgery, will take part in a panel discussion on Spinal Anesthesia at the meeting of the American College of Surgeons in Boston November 3-7. Dr. Bradshaw will discuss the merits of continuous spinal anesthesia.

* * *

Dr. Arthur Grollman, Research Professor of Medicine, and Dr. Tinsley Harrison, Professor of Medicine, spoke at the Piedmont Postgraduate Clinical Assembly of Anderson, S. C., on September 10. Dr. Grollman's subject was "Some Practical Aspects of Endocrinology". Dr. Harrison spoke on "Cardiovascular Emergencies".

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

The Wayne County Commissioners have recently allotted funds for the construction and maintenance of a sixteen bed tubercular sanatorium. The local Tuberculosis Association plans to furnish the building with beds and linen.

THE SOUTHERN TUBERCULOSIS CONFERENCE

The twenty-seventh annual meeting of the Southern Tuberculosis Conference took place in Asheville, September 15-17, and, under the able presidency of Dr. Frank Carman of Dallas, Texas, should be classed as a definite success. Over three hundred were in attendance.

Your reporter, being a medical man, is not in a position to pass upon the proceedings of the sociological meetings. The Conference is equally divided between Medical and Non-Medical Sections, meeting contemporaneously and each equally attended. Your reporter can testify to the great interest shown by those gathered in the Non-Medical Section. However, he saw them "through a glass, darkly"—but he met the Medical Section "face to face". His verdict as to its interest and accomplishments can be summed up in the famous words of J. Caesar (slightly distorted): "Veni, vidi, victus sum." Your reporter has attended many meetings of the Southern Tuberculosis Conference and has always believed them to be about the best agglomerations of tuberculosis enthusiasts that he has met. This last conference interposed no objection or exception to the above-formulated statement.

The X-Ray Clinic, to which men bring their uninterpretable and their "trick" films, was a two-hour delight. Dr. Paul Turner of Louisville (who, if Clifton Fadiman of "Information Please" fame suddenly passed out of the picture, should certainly be drafted for the job) conducted the informal open forum with inimitable wit and savoir faire—stimulating, criticizing, wisely and humorously guiding, never at a loss to praise or ridicule, always in that kindly vein that has made him beloved by all in the five years that he has voluntarily assumed the role of interlocutor. The X-Ray Clinic was, as always, a huge success; it constitutes a most original section in the Southern Tuberculosis Conference, a section which, insofar as your reporter knows, is not to be duplicated anywhere.

The banquet on Monday night, September 15, was attended by 287 persons. Good speeches were made and listened to with attention. The high light of the evening, in a humorous sense, was reached when Dr. J. D. Riley of Booneville, Arkansas, being rather fulsomely introduced by Dr. Ringer, who was presiding, told an apt story, the point of which was that it was quite extraordinary how far a little bull would go!

To your reporter, the scientific peaks of the conference were two in number; namely, the lecture on Monday afternoon by Dr. H. C. Sweeney of Chicago on "The Relationship of Pneumoconiosis to Tuberculosis, and the "Summarization" of Dr. Frank S. Dolley of Los Angeles, California, which followed three papers on surgical procedures employed in the treatment of pulmonary tuberculosis. Dr. Sweeney gave a fascinating analysis and description of silicosis, silico-tuberculosis, and allied conditions, illustrating his points with charts, diagrams and photomicrographs, the result being a complete whole which was as satisfying intellectually and scientifically as its presentation was sequential and dramatic.

Dr. Dolley reviewed surgical measures in the management of pulmonary tuberculosis, dwelt upon indications, procedures, complications, pitfalls, and times to "stay out"; he also dwelt, one might almost say, upon the philosophy of treatment and evidently felt that pulmonary tuberculosis was by way of becoming a surgical disease—a conclusion with which some of his auditors did not feel able to agree. Be that as it may, his talk was full of

good points, apt examples and logical deductions. After all, it is only from the free discussion of controversial matters that true advance results.

In short, the Southern Tuberculosis Conference was a real achievement. Those attending it felt that they had been present at one of the best tuberculosis meetings held annually in this country, and left Asheville full of enthusiasm for the organization, its aims and its program; and keen with anticipation for next year's gathering in Memphis, Tennessee.

NORTH CAROLINA EYE, EAR, NOSE AND THROAT SOCIETY

The North Carolina Eye, Ear, Nose and Throat Society held its seventh annual meeting in Goldsboro September 24 and 25. Dr. B. E. Ellis, Assistant Professor of Otolaryngology at the University of Indiana, and Dr. LeGrand H. Hardy of New York were the speakers for the two scientific sessions. At the morning session, September 25, Dr. Ellis spoke on "Facial Nerve Injuries and Their Repair" and Dr. Hardy gave an "Evaluation of Orthoptic Training". At the afternoon session Dr. Ellis' subject was "The Treatment of Intranasal Tumors" and Dr. Hardy spoke on "Color Vision".

At the business meeting held on September 25 Dr. H. C. Wolfe of Greensboro was elected president; Dr. J. H. Fitzgerald of Smithfield was elected vice president; and Dr. V. F. Couch of Winston-Salem was reelected secretary-treasurer. This year's officers were Dr. Milton R. Gibson of Raleigh, president; Dr. T. C. Kerns of Durham, vice president; and Dr. V. F. Couch, secretary-treasurer.

SIXTH DISTRICT MEDICAL SOCIETY

The Sixth District Medical Society met at the Tar Heel Club in Raleigh on September 18 at 3 p. m., Dr. G. S. Coleman, president of the Wake County Medical Society, presiding. Following the invocation by Dr. S. L. Stealey and the Address of Welcome by Dr. Verne S. Caviness, the following scientific program was presented:

Toxemia of Pregnancy—A Fifteen-Year Follow-Up Study—Dr. Ivan M. Procter, Raleigh.

Hypertension: Some Recent Advances—Dr. Tinsley R. Harrison, Professor of Medicine, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.

The Heart in Hypertension—Dr. George E. Mackie, Wake Forest.

Relation of Anomalies of the Renal Vessels to Kidney Disease—Dr. John S. Rhodes, Raleigh.

Recent Advances in Sulfonamide Therapy — Dr. Jerome S. Harris, Durham.

The Diagnosis and Treatment of Acute Surgical Diseases of the Upper Abdomen—Dr. Herman Max Schiebel, Durham.

At the business meeting following the program, the following officers were elected: Dr. Verne S. Caviness, Raleigh, president; and Dr. John Hunter, Cary, vice-president. The secretary and treasurer are to be appointed by the president. This year's officers were Dr. Oscar S. Goodwin, president; Dr. Verne S. Caviness, vice president; Dr. Earl W. Brian, secretary-treasurer. Dr. George L. Carrington is counselor of the Sixth District.

Dinner was served at 6:30.

NINTH DISTRICT MEDICAL SOCIETY

The Ninth District Medical Society met in Statesville at the Vance Hotel on September 25 at 3 p. m. After the meeting was called to order by Dr. I. E. Shafer, District Councilor, Dr. Harry Gamble gave the invocation. The Address of Welcome was given by Dr. M. B. Clayton, Dr. J. R. Terry responding. After the election of officers and the Memorial Service held by Dr. T. V. Goode, the following program was presented:

The Plasma Protein—Its Physiology Relative to the Normal and Failing Circulation—Dr. F. B. Marsh, Salisbury.

Blood Plasma—Technical Discussion—Dr. John Elliott, Salisbury.

Etiology and Classification of Hypertension—Dr. John R. Williams, Winston-Salem.

The Protection of the Soldier Against Communicable Disease—Capt. John W. R. Norton, Fort Bragg, N. C.

Discussion:

Dr. James W. Davis, Statesville.

Dr. C. W. Armstrong, Salisbury.

The Procurement of Medical Officers for Active Duty in the Army—Major R. C. Tatum, Headquarters, First Military Area, Knoxville, Tenn. Modern Concepts of Vitamin Therapy — Dr. D. Frank Milam, Durham.

Dr. James W. Davis was toastmaster for the dinner at 7:30 p. m. A motion picture on "Intravenous Anesthesia" was shown and the guest speaker, Dr. L. G. Beall of Black Mountain, was heard.

Officers elected for 1942 were Dr. S. A. Rhyne, Statesville, president; Dr. Douglas Hamer, Jr., Lenoir, vice president; and Dr. J. Sam Holbrook, Statesville, reelected secretary-treasurer.

This year's officers were Dr. W. D. McLelland, Mooresville, president; Dr. S. A. Rhyne, vice president; and Dr. J. Sam Holbrook, secretary-treasurer.

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society met in Winston-Salem on September 9. Dr. J. F. O'Neal, Assistant in Surgery at the Bowman Gray School of Medicine of Wake Forest College, spoke on "The Introduction of Fluids Into the Body by Way of the Bone Marrow".

HALIFAX COUNTY MEDICAL SOCIETY

The Halifax County Medical Society held its regular monthly meeting Friday night, September 12, at the Roanoke Rapids Hospital.

Resolutions of respect to the late Dr. Thomas Williams Mason Long, written by Dr. B. M. Nicholson of Enfield, were presented to the society.

The guest speaker of the meeting was the distinguished Dr. Dean Cole of Richmond, Virginia, who presented a paper on "The Role of the General Hospital in Community Control of Tuberculosis."

MECKLENBURG COUNTY MEDICAL SOCIETY

The Mecklenburg County Medical Society resumed its semi-monthly meetings in September. On September 2 Dr. T. C. Bost presented a case report, Dr. Tom Byrnes gave a paper on "Pin-Worm Infestation of the Appendix", and Dr. Julian Jacobs spoke on "Padgett's Skin Grafting". On September 16, a "Review of Functions of the Frontal Lobes", with case report, was given by Dr. Archie Barron. Dr. Lester Todd spoke on "Allergic Excitants in Pneumococcal Colds".

THE DUKE SYMPOSIUM

A Symposium on Problems of Civil and Military Emergencies sponsored by the Duke University School of Medicine and Duke Hospital will be held October 16, 17, and 18 in the Page Auditorium on the West Duke Campus. The program of this Symposium appeared in the September issue of the North Carolina Medical Journal.

NORTH CAROLINA NEUROLOGICAL AND PSYCHIATRIC ASSOCIATION

The North Carolina Neurological and Psychiatric Association will meet Friday, October 24, at the State Hospital at Morganton, at 2 p. m. The following program will be presented.

1. Shock Therapy

1. Metrazol Therapy—Drs. R. H. Long and J. R. Saunders, State Hospital, Morganton.
2. Insulin Therapy—Dr. Otto Billig, Highlands Hospital, Asheville.
3. Electro-Therapy—Drs. Griffin and Griffin, Appalachian Hall, Asheville.

Discussants:

- Drs. J. G. N. Cushing and Mary Cushing of Pinebluff Sanatorium and Dr. Hans Lowenbach of Duke Hospital.
2. Changing Trends in Therapy—Dr. John A. Rose, Bowman Gray School of Medicine, Winston-Salem, N. C.
 3. Encephalitis—Dr. Paul Kimmelstiel, Charlotte Memorial Hospital, Charlotte.
 4. Deficiency Diseases of the Nervous System—Dr. Leo Alexander, Duke Hospital, Durham.
 5. Business meeting.
 6. Social Hour. Hosts: Dr. F. B. Watkins and Staff of State Hospital.
 7. Dinner.
 8. Round Table Discussion of Neurological and Psychiatric Examinations of the Draffees. Led by Dr. J. C. George, U. S. M. C., Asheville, and Dr. L. G. Beall, Black Mountain.

Officers of the Society are Dr. Archie A. Barron, Charlotte, president; Dr. F. B. Watkins, Morganton, vice president; and Dr. Burke Suitt, Durham, secretary and treasurer. All doctors are invited to attend this meeting. Those planning to come should notify Dr. F. B. Watkins, Superintendent, State Hospital, Morganton.

ANNUAL SCIENTIFIC ASSEMBLY

The Annual Scientific Assembly will be held in Washington, D. C., September 30-October 2, at the Mayflower Hotel. The program this year will be devoted to Current Problems in General Medicine.

AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

Sir Harold Delf Gillies, one of Great Britain's leading plastic surgeons, who is now in charge of special units for the repair of facial injuries in the London area, is to be a guest of the American Academy of Ophthalmology and Otolaryngology national organization of eye, ear, nose and throat specialists, when it meets in Chicago at the Palmer House, October 19-23.

Sir Harold will address a special defense program presented by the Academy on Monday evening October 20.

MILITARY SURGEONS MEETING

The Association of Military Surgeons of the United States will meet October 29-November 1 at the Brown Hotel, Louisville, Ky.

All members of the medical profession are invited to attend as guests and it is particularly hoped that as many members of the Medical Defense Committees as possible will come.

AMERICAN CONFERENCE ON INDUSTRIAL HEALTH

Under the auspices of the American Association of Industrial Physicians and Surgeons the American Conference on Industrial Health will hold its Second Annual Meeting on November 5 and 6, 1941, at Chicago Towers, Chicago, Illinois. This organization maintains a public forum for all who are interested in the prevention of disease, injury and disability in industry, and the active supervision and promotion of health in industrial groups.

The opening session will be a symposium on the technical problems of industrial health on the basis that health supervision in industry involves two great principles: (1) the adjustment of the working environment to the employee; and (2) the adjustment of the employee to the working environment, including also the human environment. The technical problems are the result of the application of these principles, and run the whole gamut of public health as applied to industry.

The afternoon session will be a symposium on the economics of industrial health, including: (1) organization and cost of a health service, and (2) discussion on the value of industrial health service to the employer, the employee and the public.

The morning of the second day will be given over to a symposium on the social implications of industrial health, discussing how far an industrial health service should go; are hospital and medical care plans related to industrial health service in any practical way; does legislation play a part in this problem; and the evaluation of labor turnover, spoilage, and lack of trained men, together with the experiences of management and the interests of insurance carriers in the medical and social problems presented.

The sessions will close with a schedule of plant medical department inspections, by special arrangements with local industries.

Change in Spelling

A change in the spelling of the name "Petrolagar" to "Petrogalar" has been announced by the Petrogalar Laboratories. The change is being made in both the product name and corporate name.

Company officials, while pointing out that the adoption of the new spelling does not affect the formula or quality of the product in any way, said that they considered the change advisable to avoid any possible misconception as to the nature of the product.

"Because it has never been the intention of the company to imply that agar-agar was used for any other purpose than as an emulsifying agent, the last syllable of the former name has been altered in favor of the new spelling," officials said.

Officials emphasized that no change has been made in the size of the package, price, or formula and that each of the five different types of the product will carry the new spelling "Petrogalar". The new corporate name is: Petrogalar Laboratories, Inc., and the address remains, 8134 McCormick Boulevard, Chicago, Illinois.

REJECTIONS AT THE INDUCTION STATION, FORT BRAGG

The principal causes for rejection of the draftees from North Carolina examined during August were as follows:

	White	Colored	Total
Total Examined	2294	701	2995
Total Rejected	228 (9.9%)	129 (18.4%)	357 (12.25%)
1. Venereal Disease	9	59	68
Gonorrhea	(7)	(54)	(61)
Chancroid	(1)	(3)	(4)
Lues	(1)	(2)	(3)
2. Pes Planus	24	25	49
3. Insufficient Vision	36	6	42
4. Varicose Veins	20	0	20
5. Insufficient Teeth	16	3	19
6. Otitis Media	12	3	15
7. Hernia			
Inguinal	5	7	12
8. Lung (X-ray)	8	3	11
9. Pilonidal Cyst	11	0	11
10. Underweight	6	2	8
11. Miscellaneous	81	21	102

CIVILIAN DEFENSE

According to a joint statement issued on September 4 by the U. S. Director of the Office of Civilian Defense, F. H. LaGuardia, and the Chairman of the American National Red Cross, Norman H. Davis, State and local defense councils are the official agencies responsible for the coordination of all available resources which may be required for civilian protection in the event of belligerent action. Defense Councils should therefore acquaint themselves with the resources of the local Red Cross Chapters in providing food, clothing, shelter, nursing care, transportation, and other basic necessities and should integrate them into the comprehensive local program. Duplication of trained and experienced personnel and of available supplies of the Red Cross should be avoided except where supplementation is essential to meet the anticipated needs of the community.

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The first of a series of pamphlets outlining medical provisions for civilian defense, designed for the organization of emergency medical field units, entitled "Emergency Medical Service for Civilian Defense" Bulletin No. 1, was issued recently by the Office of Civilian Defense.

The Bulletin outlines in considerable detail a basic plan for the organization and expansion of hospital facilities along both seaboards and in industrial areas in the interior. It also outlines plans for the rapid expansion of nursing facilities through intensive training of adequate numbers of Volunteer Nurses' Aides and other nursing auxiliaries.

The Bulletin was prepared by the Medical Division of the Office of Civilian Defense, of which Dr. George Baehr, Medical Director, U. S. Public Health Service, is Chief Medical Officer, and the Medical Advisory Board, of which he is chairman. It will be distributed by State Councils of Civilian Defense to local Directors of Civilian Defense.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The written examination and review of case histories (Part I) for Group B candidates will be held in the various cities of the United States and Canada on Saturday, January 3, 1942, at 2 p. m. Formal notice of the place of examination will be sent each candidate several weeks in advance of the examination date. No candidate will be admitted to examination whose examination fee has not been paid at the Secretary's Office. Candidates who successfully complete the Part I examination will proceed automatically to the Part II examination held in June 1942.

Candidates for reexamination in Part I (written paper and submission of case histories) must request such reexamination by writing the Secretary's Office not later than November 15, 1941. Candidates who are required to take reexaminations must do so before the expiration of three years from the date of their original examination.

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the entire Board, meeting at Atlantic City, N. J., in June 1942, immediately prior to the annual meeting of the American Medical Association.

Application for admission to Group A, Part II, examinations must be on file in the Secretary's Office not later than March 1, 1942.

As previously announced in the Board booklet, this fiscal year (1941-1942) of the Board marks the close of the two groups of classification of applicants for examination. Thereafter, the Board will have only one classification of candidates, and all will be required to take the Part I examinations.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

"PAY-YOUR-DOCTOR-WEEK"

Fourth annual "Pay-Your-Doctor-Week" will be observed this year November 2 to 8.

Inaugurated in 1938 by California Bank in Los Angeles, observation of "Pay-Your-Doctor-Week" swiftly spread to scores of cities throughout the country and last year virtually achieved nationwide recognition.

Primary purpose of "Pay-Your-Doctor-Week" is to pay tribute to the members of the healing profession who quietly but relentlessly continue the battle against disease and sickness, particularly at this time when much of the world is engaged in destroying rather than preserving life.

Recognized also is the fairly widespread tendency to "let the doctor wait" until all other bills have been paid.

Sponsors of "Pay-Your-Doctor-Week" point out that the plight of the country doctor who is often paid with farm products or a share in next year's crop has been widely publicized in recent years while little has been said about the city doctor whose reward for services rendered all too frequently consists mainly of long hours of practice and vague promises of payment sometime in the future.

Because "Pay-Your-Doctor-Week" was originated and is sponsored by the banking profession, the question of medical ethics is not involved.

Banks sponsoring the week throughout the country call attention to the fact that funds are available to lend for the purpose of paying doctor bills.

NEWS NOTES

Several North Carolina doctors took part in the program of the Southern Tuberculosis Association meeting, held in Asheville September 15, 16, and 17. The following doctors presented scientific papers: Dr. E. J. Chapman, Dr. J. T. Saunders, and Dr. Julian Moore of Asheville, and Dr. Robert Reeves of Durham. At the banquet Monday night, presided over by Dr. Paul H. Ringer of Asheville, Dr. P. P. McCain gave the Address of Welcome and Dr. C. W. Armstrong, of Salisbury, President of the North Carolina Tuberculosis Association, brought greetings.

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Dr. George M. Leiby, formerly consultant for the Division of Epidemiology of the North Carolina State Board of Health, and for the past year Director of the Bureau of Venereal Disease of the District of Columbia Health Department, has resigned to become Assistant Health Officer of the Louisiana State Health Department.

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Dr. C. N. Herndon, formerly of Charlotte, is now at Heredity Clinic, University of Michigan, Ann Harbor.

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Dr. John Webster McGehee of Reidsville died suddenly September 23 in Reidsville. It is believed that death was due to a heart attack.

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Lt. Roy F. Roberts, M. C., formerly of Asheville, now at Camp Shelby, Mississippi, was married to Miss Lois Batson of Avera, Mississippi, on October 5, 1941.

Cross Section Anatomy Slides in Kodachrome

New, life-colored Kodachrome Lantern Slides from cross section studies of the entire human body by Morton, Truex, and Kellner, of the Department of Anatomy, Columbia University, are now available, on order, from Professional Research Products, Inc., 2929 Broadway, New York, New York.

These Kodachrome lantern slides were designed primarily to serve as an essential part of an improved method of teaching Cross Section Anatomy.

The photographic reproductions are made from wax models, casted with utmost fidelity from the actual cross sections of carefully selected and prepared bodies. The impressions are so accurate that not only the smallest structures, but also the texture of the tissues are registered in the models. These are reproduced in the slides in the natural life-like color of freshly cut tissues.

In addition to medical schools, the slides should be of particular interest to surgeons, roentgenologists, students, lecturers and others interested in anatomy.

"Depression or No Depression, War or No War"

Since 1930, month after month, a unique series of educational-to-the public advertisements have appeared on the first page of *Hygeia*. The sponsor's name, Mead Johnson & Company, has to be looked for with a magnifying glass, and appears only for copyright purposes. Not a product is ballyhooed. Instead, appears good, clean, convincing reasons, with choice illustrations, why mothers should seek pediatric advice from their physicians.

AUXILIARY

AUXILIARY PROGRAM FOR THE YEAR

As the JOURNAL goes to press the Board of Directors of the Auxiliary to the Medical Society of the State of North Carolina is making preparations for its Fall meeting. The Board members will be guests of the organizing and honorary president, Mrs. P. P. McCain, at her home at Sanatorium on October 1 for an all-day gathering and luncheon. Officers, committee chairmen and councillors will complete plans for the season's activities.

The State Auxiliary program for the year 1941-42 will emphasize organization, programs, *Hygeia*, legislation, public relations, national defense, student loan fund, McCain Bed at Sanatorium, Martin L. Stevens Bed at Western Sanatorium, the McCain Endowment Fund, the Jane Todd Crawford Memorial, observance of Doctors' Day, and research.

The organization work for the year is already under way. The Councilors in the ten medical districts of the state have received their instructions, and letters have gone out to the presidents of county medical societies having no organized auxiliaries, asking the authorization and appointment of county organizers. This effort to increase the number of county auxiliaries has received the support of Dr. F. Webb Griffith, president of the State Medical Society, who has urged the endorsement of the new groups to the county presidents. Favorable reports are already coming in from this work, and a more complete picture will be available after the Councilors present their plans to the Board of Directors on October 1.

Organization work is under the direction of Mrs. Clyde R. Hedrick of Lenoir, first vice president and chairman of organization, and immediate past state president of the Auxiliary. Through her, the Auxiliary will also stress monthly meetings for the county organizations, planned programs on *medical and health* subjects with authorized speakers, and cooperation with the advisory councils from the component county medical societies.

National Defense

The Auxiliary has expanded its state program this year to include national defense.

It has been said that "Health is our first line of defense." Women are now looking to doctors' wives for leadership in health education for national defense, and the Auxiliary will meet this responsibility by urging its members to a comprehensive study of nutrition, first aid, and other home defense measures.

Further, the Auxiliary will cooperate with the Medical and Surgical Relief Committee of America, a war relief agency engaged in collecting medical instruments and supplies and directing them to the sources most urgently in need. This agency has the endorsement of the State Medical Society. The important national defense chairmanship has been assumed by Mrs. Thomas Leslie Lee of Kinston.

Other Activities

The Auxiliary will also advocate an expanded study of medical legislation, with particular attention to the National Health Act; the building of good will for the profession through its public relations department; increased distribution of *Hygeia*; reading of prescribed literature, including the *Bulletin* of the National Auxiliary, *Hygeia*, the editorial and Auxiliary pages of the NORTH CAROLINA MEDICAL JOURNAL, the editorial pages of the *Journal of the American Medical Association*, the Handbook for State Auxiliaries and the Minutes and Transactions of the State and National Auxiliaries.

The philanthropies of the State Auxiliary have a lasting appeal to doctors' wives in North Carolina. Through their contributions two beds are maintained for tubercular patients at the State Sanatorium and the Western Sanatorium at Black Mountain—the McCain and Stevens Beds. Patients occupying these beds have established the cheerful tradition of returning to sound health. It is the hope of the Auxiliary that the Endowment Fund and the Student Loan Fund will continue to grow, even during the difficult year ahead.

In its association with the Southern Medical Auxiliary, the State Auxiliary will continue its contribution to the Jane Todd Crawford Fund for a permanent memorial in Kentucky, and research on the lives and work of eminent North Carolina doctors as its contribution to the medical annals of the State and the Southern medical lending library.

Board of Directors, 1941-42

With pride and appreciation, the State President announces the names of members of the Board of Directors of the Auxiliary to the Medical Society of the State of North Carolina for the season 1941-42. Some are new officers and chairmen who have come to the Board highly recommended; others are our beloved stand-bys, officers who have worked in the State Auxiliary since its inception and without whose sympathetic interest we could not exist.

To them all sincere gratitude is expressed for their willingness to serve, their eagerness to cooperate, their splendid spirit of fellowship. I commend them to the members of the Auxiliary throughout the state and congratulate the organization that its interests and causes are worthy of the services of these women:

Executive Board

Honorary President and Chairman of Past Presidents — Mrs. Paul Pressly McCain, Sanatorium.

First Vice President and State Chairman of Organization — Mrs. Clyde R. Hedrick, Lenoir.

Second Vice President and Chairman of McCain-Stevens Beds—Mrs. J. R. Terry, Lexington.

Third Vice President and Chairman of Student Loan Fund—Mrs. John S. Hooker, Chapel Hill.

Recording Secretary—Mrs. Harry Winkler, Charlotte.

Corresponding Secretary — Mrs. Joseph C. Knox, Raleigh.

Treasurer—Mrs. E. Clarence Judd, Raleigh.
President elect—Mrs. R. A. Moore, Winston-Salem.

Chairman of Advisory Council from the State Medical Society—Dr. Caroline McNairy, Lenoir.

Chairmen of Standing Committees

Program—Mrs. Joseph A. Elliott, Charlotte.
Public Relations — Mrs. Wingate Johnson, Winston-Salem.

Legislative — Mrs. J. Buren Sidbury, Wilmington.

Press and Publicity—Mrs. Verne Strudwick Caviness, Raleigh.

Bulletin—Mrs. Ben Kendall, Shelby.

Hygeia—Mrs. W. G. Byerly, Lenoir.

Memorial—Mrs. George W. Mitchell, Wilson.
 Historian — Mrs. J. Roy Hege, Winston-Salem.

Exhibits—Mrs. Alfred A. Kent, Jr., Granite Falls.

Research—Mrs. Rigdon Dees, Greensboro.

Scrap Book—Mrs. Ben F. Royal, Morehead City.

Jane Todd Crawford Memorial—Mrs. Frederick R. Taylor, High Point.

National Defense—Mrs. Thomas Leslie Lee, Kinston.

Auditor—Mrs. R. S. McGeachy, New Bern.

Nominations—Mrs. George M. Cooper, Raleigh.

Convention—Mrs. Henry Sloan, Charlotte.

Councilor to Southern Medical Auxiliary—Mrs. J. Buren Sidbury.

State Councilors

First District — Mrs. Thomas L. Carter, Gatesville.

Second District—Mrs. K. B. Pace, Greenville.

Third District—Mrs. D. M. Royal, Salemburg.

Fourth District — Mrs. C. F. Strosnider, Goldsboro.

Fifth District — Mrs. William T. Rainey, Fayetteville.

Sixth District—Mrs. P. G. Fox, Raleigh.

Seventh District — Mrs. G. Aubrey Hawes, Charlotte.

Eighth District—Mrs. Edward T. Harrison, High Point.

Ninth District — Mrs. James W. Vernon, Morganton.

Tenth District—Mrs. D. I. Campbell King, Hendersonville.

* * *

As we begin our work for another year we would remind the wives of doctors throughout North Carolina that ours is an organization of service and education. In the words of the National president, "The time has come when poorly informed wives of doctors may do actual harm to the welfare of scientific medicine." It must be understood that your Auxiliary cannot imitate your various social and civic clubs in its programs; the Auxiliary is concerned *only*

with medical and health interests. It must not deviate from this course. We would pass on, too, the counsel of that pioneering doctor's wife, Mrs. Samuel Clark Red of Texas, who twenty years ago founded the National Auxiliary: "Put your auxiliary duties next to those of family and religion."

MRS. SIDNEY SMITH,
 State President.

September 19, 1941.

In Memoriam

Resolutions of Respect to Thomas Williams Mason Long

At the ancestral home in Northampton County, Thomas Williams Mason Long was born on the night of January 14, 1886. On February 3, 1941, during the session of the General Assembly, of which he was a member, he died at Rex Hospital in Raleigh.

His short span of fifty-five years was so filled with achievement that we pause now to recount his worth and to pay tribute to him, whose memory will be perpetuated as the years come and go.

Living the normal life of a boy, and perhaps with better environment than some of his associates, he reached young manhood. His early education consisted of training under a governess, at a private school, at an academy, at a polytechnical institute. Finally in 1903 he entered the University of North Carolina to study medicine. At this time he was almost 18 years old. He received the prescribed course at Chapel Hill, and then went to the University College of Medicine in Virginia, from which he was graduated in 1908. He received his license to practice medicine the same year. After serving his internship at the State Hospital at Petersburg, Virginia, and practicing a short time at Garysburg, North Carolina, he moved to Roanoke Rapids in 1910.

At that time Roanoke Rapids was infested with malaria to such an extent that conditions were alarming. Then it was that Dr. Long first gave himself in public service, for it was he who began the campaign which finally eradicated malaria in that section of the county. Two years later, in 1912, Dr. Long, Dr. E. H. Adkins, and Dr. H. C. Irvin founded the Roanoke Rapids Hospital. Dr. Long was made President of the Board of Directors, and served as president of that Board from 1912 to 1932. These two outstanding acts were only the forerunners of the service Dr. Long rendered to this county and state.

On September 6, 1941, at the Roanoke Rapids Hospital a memorial tablet was unveiled in his honor. Judge R. Hunt Parker, in his eulogy at the unveiling, said, "We are here this afternoon to unveil a tablet in honor of the best beloved man who has ever lived in this community."

The inscription on the tablet is: "In grateful memory of Thomas Williams Mason Long, M.D., January 14, 1886-February 3, 1941. A leader in the founding of Roanoke Rapids Hospital, and training school for nurses, and in the eradication of malaria in this community."

In 1915 he was elected Chairman of the City Board of Commissioners of Roanoke Rapids, and

served until the form of government was changed in 1922, when he was elected Mayor. He served in that office until 1930, which made a period of fifteen years at the head of local government. He also served as Trustee of Roanoke Rapids Graded School District from 1915 to 1930. As a member of the local governing body he advocated the incorporation of Roanoke Rapids and Rosemary into one city. These were two separate towns, but near enough together to be one. This incorporation was made, thereby resulting in cooperation between the two, and growth for both.

Along with the service he was rendering at home, he was serving his county and state as a public servant in his profession. He was a member of the County and State Medical Societies and of the American Medical Association, and was Secretary-Treasurer of the State Medical Society from 1937 to 1941. He was a director of the State Hospital from 1918 to 1920. He was Chairman of the Board of Directors of the North Carolina Sanatorium from 1922 to 1931, and was a member of the State Board of Medical Examiners from 1926 to 1932. In all these organizations he was liked for his manner as a man, and for his knowledge, foresight, and sagacity in the profession.

In 1931 Dr. Long was a member of the House of Representatives, going there as a chosen successor to Clement Kitchen, who had died after election and before serving. For the next session of the Legislature Dr. Long was elected to the Senate in 1933. He served in the Senate thereafter in 1937, 1939, and in 1941 until his death. He made an enviable record while in the Legislature. It was said by his colleagues and by a Lieutenant Governor that "Dr. Tom was the best loved member in that body." It was said by health authorities that "Dr. Long had sponsored health measures which placed North Carolina among the leading states in health laws." Dr. Long was instrumental in the passage of a bill appropriating \$600,000 for the erection of a tubercular sanatorium in Wilson County. This sanatorium will be known as the Long Memorial.

In 1918 he joined the Episcopal Church, and became a vestryman in that church. He was a mason, belonging to the several bodies of the York Rite, and was also a member of the Junior O. U. A. M.

Dr. Long was married in 1910 to Maria Greenough Burgwyn, sister of Judge W. H. S. Burgwyn. To them were born five children. Their home life has been an example worthy of emulation by any family.

Tom Long—we loved him while he was here; we cherish his memory now that he is gone. His imperishable virtues will live on in the hearts of men who knew the real man.

To have had such a man among us was a joy, and to remember him is a privilege. He was a friend to mankind.

HALIFAX COUNTY MEDICAL SOCIETY.

BOOK REVIEWS

A CORRECTION

In the review of Grollman's *Essentials of Endocrinology* which appeared in the September issue of the *North Carolina Medical Journal*, the name of the publisher was unintentionally omitted. This book is published by the J. B. Lippincott Company, Philadelphia, and contains 480 pages, with 74 illustrations. The price is \$6.00.

Handbook of Communicable Diseases. By Franklin H. Top, A.B., M.D., M.P.H., Director, Division of Communicable Diseases and Epidemiology, Herman Kiefer Hospital and Detroit Department of Health, and Collaborators. 682 pages, with 73 text illustrations and 10 color plates. Price \$7.50. St. Louis: C. V. Mosby Co., 1941.

The author has wisely solicited contributions from a number of capable collaborators, including nurses, and has allotted the greatest space to the most prevalent diseases—syphilis, tuberculosis, pneumonia, and gonorrhea. The diseases are grouped by the portal of entry into the body—for instance, the venereal diseases are included under contact diseases of the mucous membranes. In addition to chapters on the management of communicable diseases by the nurse in the home and hospital, suggestions for nursing care are found under discussions of specific diseases. Suggestions for treatment are sound, and the sulfonamides are recommended in proper perspective to other forms of therapy. Occasional annoyances such as dosage of one drug being given in grams and another in grains in the same paragraph crop up. Inevitable errors or oversights are found; for example, the incidences of trichinosis in autopsy material are quoted as 10-25 per cent, while published figures for North Carolina and Louisiana are 2.8-3.5 per cent. The illustrations, particularly those in color, are admirable, and are familiar to those who have seen Parke-Davis' *Therapeutic Notes*. The volume should prove extremely helpful to medical students and nurses, and is a "must" for public health officials and public health nurses.

Microbes Which Help or Destroy Us. By Paul W. Allen, Ph.D., Professor of Bacteriology, University of Tennessee; D. Frank Holton, Ph.D., Associate Professor of Bacteriology, University of Tennessee; and Louise Allen McBee, M.S., formerly Assistant in Bacteriology, University of Tennessee. 540 pages, with 102 text illustrations and 13 color plates. St. Louis: C. V. Mosby Company, 1941. Price, \$3.50.

This book will serve with distinction the purpose for which it was intended. Written primarily for the layman, it brings in review most of the common communicable diseases which we are heir to, and presents them in a most interesting, easily read, and understandable manner. Through such books as a medium the public should become "microbe conscious", and as a result of such education and cooperation become a mighty force in the control of dangerous diseases. A wide variety of common diseases are adequately covered, and the reader is given a concept of the condition from many angles, but especially from the standpoint of prevention.

The authors admirably bring out the fact that not all microbes are dangerous. On the contrary, the majority are rather very helpful to human life. Life would be very different or impossible without these helpful bacteria. Many of the ways in which bacteria are beneficial are discussed.

The book is recommended for laymen and students. No doubt many members of the medical profession would also enjoy it and profit greatly by reading it.

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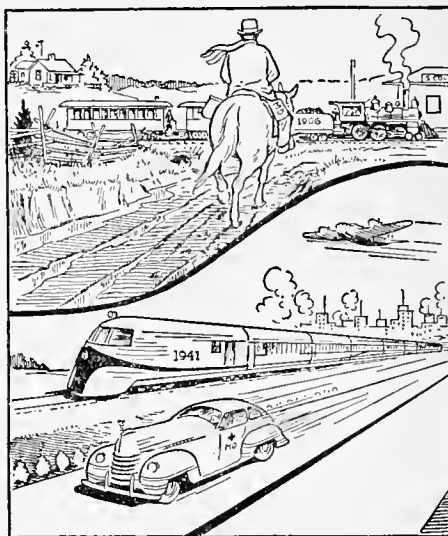
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SUCH a singleness of purpose and devotion to an ideal accounts largely for a history of unusually successful annual meetings, each better than the last. Logically, the past is a basis for predicting another top meeting at St. Louis, November 10-13.

REGARDLESS of any physician's medical interest, there will be much to challenge this interest at St. Louis. Eleven general clinical sessions, nineteen sections, three independent organizations meeting conjointly, and outstanding scientific and technical exhibits, will be available—still in step with progress.

ALL members of state and county medical societies in the South are cordially invited to attend. And all members of state and county medical societies in the South can be and should be members of the Southern Medical Association. The annual dues of \$4.00 include the Southern Medical Journal, a fine publication recognized as a valuable instrument to physicians of the South in the pursuit of their professional careers.

SOUTHERN MEDICAL ASSOCIATION

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THE SICK INDIVIDUAL AS A BIOLOGICAL PROBLEM

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The above title has a harsh sound. It is surgical in its ring: cut it out, drain it or sew it up. As we progress in this discussion I trust the title, as useful and as true as it is, will be tempered by thought in which sympathy, not slush, and sympathetic understanding will find their place. Such paths may lead far from the shop of the apothecary and the operating amphitheatre.

Conditions and situations broad in their scope and perhaps indefinite in their designation are difficult to define, even though they may be very real. Perhaps if they could be defined and catalogued they would be marred and suffer a loss in their significance. God, love, law resist a definition, and yet we not only respect them, but tie to them. It would create an unhappy situation if we denied them. The same form of thought applies to conditions which are tangible, or at least ascertainable—for example, a state of disease, which we designate sickness or an illness. In these states we, as physicians, tend to isolate and card-index certain of the particularities of these conditions in order to make a definition through a diagnosis, and when we do, we fail to see the wholeness of disease as it expresses itself as a biological phenomenon whether this be in an ameba or in man. Analysis usually leads to detailed understanding; synthesis develops a composite picture of a state as a whole. There are analytical physicians and synthetic physicians. In the latter group are to be found the individuals who appreciate analysis only as it enables them to see compositely

and understand the sick individual, the illness in its entirety.

Variation is certainly one of the most interesting characteristics of disease. This quality not only shows itself in tissue changes and in the symptoms produced by such changes, but in the intensity and significance of the symptoms as modified by the psychical status of the individual in which they develop. With due regard for the factor of variation and the difficulty of formulating an exacting definition for disease, such a definition may be worth while if it possesses breadth, and by having this quality stimulates not only thought, but investigation. Likely a modification of Herbert Spencer's statement in this connection remains our best attempt at a definition of disease in a broad sense: that it is a state which prevents an organism from relating itself to its environment. This definition is eminently worth while because it is not specific and therefore has an element of scope and application in it. The definition is only concerned with the physical and therefore is more than incomplete for the thoughtful physician who realizes more and more the significance, often the dominating role played by the psychical in preventing an individual from relating himself to life in a useful and a happy fashion. Unhappiness inevitably leads to physical incapacity.

The lack of specificity in the above definition, the factor of elasticity in it, makes it most useful. Such a definition takes one away from isolated entities as pneumonia, pellagra and the neuroses and asks us to see sick individuals in such diseased states as a

whole, as biological problems, as organisms so modified by tissue processes other than those of a normal order that the individual is not only unable to relate himself to himself from within, both physically and chemically, but he is also unable to effect and maintain an outward workable relationship. He is a sick individual detached from his normal environment and for a period only usefully related to his bed. The splendid and stimulating task of the real physician, "The Biologically Minded Physician"—not of the very important but card-indexing specialist—is to ascertain, not the isolated, but the composite cause of this maladjustment and then to employ those measures which will to some extent or entirely relate this sick person to his environment, whatever that environment has to be. Modifications of the environment which facilitate adaptation may be possible, but an evolution from an illness usually does not work this way any more than organic evolution has. The individual or species attempting survival must be the active agent in effecting this survival through processes both physical and psychical which lead to adaptation. There can be no more important challenge both to the head and the heart than such a thrilling adventure. The physician serves in some small measure as the hand of nature, employing first the methods of nature, and as adjuncts other agencies—chemicals, surgical intervention, and above all, sound advice—in an attempt to relate a life so that it may not only function effectively, but may live in adjusted beauty.

In attempting such an adjustment the biological physician, never the mechanical and too often thoughtless dispenser of drugs, may have as his ideal the complete physical and psychical restoration of a sick individual to what he hypothecates is the normal. The ideal is entirely worth while. We cannot live happily without the reach for the ideal, but it is well to realize that a reconstitution to the normal may not only be impossible, it may be unwise. We are attempting to relate, not to make perfect, so that the persistence of a modified physical or psychical state may in itself be an instrument for adaptation and survival. Such modified physical factors, departures from the once normal, enabled certain species of animals to survive in difficult surroundings. The same order of thought should find its place in guiding the sick individual. We no longer become overexcited

in reducing body temperature to the normal unless the fever as such is the cause for certain symptoms which are detrimental for survival. In pneumonia there is a rather definite relationship not only between the height of the temperature curve and antibody formation, but between the numerical increase in polynuclear leukocytes and their ability to engulf and destroy pneumococci. An elevation in blood pressure above a so-called normal may not be harmful and should not be designated a symptom of disease. This elevation may be essential for renal function in the changed kidney environment in which it has to operate. The symptoms of sickness are not only guides to disturbed organ function which may require correction; they may be symptoms of an adapted life functioning likely at a lower level of physiological effectiveness, but through such function at a lower level enabling life to go on with a fair degree of adaptation. The thoughtful physician must ascertain these levels at which, not sick, but changed life can find itself and in part relate itself. Tissues so often do just this. They find in their attempt at repair or in the aging process that their ideal normal cannot be attained or maintained. They either repair themselves as structurally changed tissues of an adult order or revert to an embryonic type of tissue. Not infrequently when such processes are accomplished, the cells of a functional nature which constitute these tissues not only live as functional units, but are found to have acquired through such a change in form and an assumed change in chemical constitution a resistance to further injury. Such tissues are held for a period in a state of resistance at a certain functional level, and not only life, but life with a degree of protection, has related itself in one or more organs for the welfare of the organism as a whole. Such thoughts would retard the learned physician from too active intervention in modifying the symptoms of an illness or the changes in tissues. He would ask himself the reason for these symptoms and these changes which life, ever attempting to live, has established.

When the biological problem of the sick individual presents itself to a biological adjuster (the physician), not to an ephemeral and often thoughtless rectifier, the cause for the departure from the normal expressing itself as faulty adaptation must be ascer-

tained; a diagnosis must be made. Often, however, a perfect, a complete diagnosis is more necessary for the welfare and happiness of the physician than it is for the patient. A physician can become so insistent in his demand for a meticulous type of diagnosis that certain more important aspects of an illness may be overlooked. If we hold fast to the biological concept in this discussion we may not necessarily have to have a name attached to the maladjusted individual in order to attempt to relate him. A diagnosis, especially the type arrived at through the intervention of mercenary and half-baked specialists, may not be of much value, and it may dim the vision and mar the judgment of the interpreter of these findings. It may keep the physician from seeing the sick individual as a whole, which is after all the main point in the practice of medicine. The more nearly a complete diagnosis can be obtained, of course, the better it is for the patient and the adjuster; for the latter then finds himself in a position not only to guide judiciously, but to administer various chemicals in a scientifically accurate fashion. My reason for even raising the question as to the binding necessity for a complete diagnosis in an illness is due to two observations: first, that a certain number of more recently trained physicians appear to feel an obligation to use well nigh every known diagnostic procedure, necessary or unnecessary, in order to arrive at a very specialized type of diagnosis; and secondly, that a number of this same fine group of people feel that it is wrong to do anything in an illness towards an adjustment until some mechanical appliance indicates exactly how such an adjustment can be effected. Such physicians, not overtrained, but without breadth of understanding and an appreciation of the natural corrective tendencies on the part of tissues, may be more interested in the autopsy findings than in attempting an adjustment with or without the complete diagnosis. The sick individual is not primarily concerned with the beauty of his tissue changes as revealed at the autopsy table. The splendid training now offered by most medical schools, based as it is on an understanding of the natural sciences, biology, chemistry and physics, should create a respect for natural forces—the urge of living things to effect an adjustment, if time is allowed, through rest, best found in sleep, together with nourishment, fluid and warmth.

The above approach to a maladjusted individual may be insufficient even though it is basic, and here it is that highly specific information, scientifically applied, may exert its influence in a dramatic fashion. We need only to mention the value of digitalis in certain stages of congestive heart failure, nicotinic acid in pellagra, and the selective influence of the sulfonamide group of chemicals as agents which prevent physical catastrophies and bridge over chasms for the medical adjuster as he attempts to relate the individual as a whole. The employment of such agents in terms of their full value is dependent upon specific information based on a correct and exacting type of diagnosis, which information can generally be obtained without the use of all of the related and unrelated diagnostic procedures which are now available. I am not speaking against diagnostic detail. I am speaking for reasonableness based on judgment.

Recently I have had the pleasure of consulting a learned lawyer. He did not mechanically extricate me from prison; neither did he present me with a long, sectioned, wordy opinion. He talked with me for an hour or more on two occasions, and to my amazement when his bill was requested I learned that I was indebted to him for a considerable sum. I am wondering if there is not a lesson here for the physician. This adjuster of social relationships to existing law advised me to do this and not to do that, or in case I had to proceed in my wilfulness that it would be best for me to take such and such a course of action and to go just so far and no further. He appeared to understand my point of view. He was thoughtful, considerate and gave me the benefit of his reasoning. Advice based on a process of reasoning dependent upon thought may be unusual with certain types of physicians. Their hurry to write something in the form of a prescription, to inject something, or to cut something out precludes thoughtfulness and leads to a mechanical procedure in place of one which necessitates time and which should be full of sound guidance. With the urge of the living stuff to return to a workable normal much may be accomplished by medical advice, by the sane guidance of the wise biologically minded physician who, with a knowledge of the genetic background of his patient, reinforced by adequate diagnostic information, may have such a sweep in his understanding that suggestions even

of a simple nature may lead to a restoration or an improvement in health. Advice following perhaps hours of talk would appear to be most effective in certain individuals who have failed to localize a tissue disturbance structurally so that it may be surgically removed and who do not need a chemical to blunt their consciousness and lessen self control. An increasing number of people become unrelated physically by mental states so diverse that they even fail to partake of a name for purposes of localization. Physical adjustment becomes an easy procedure when contrasted with the many instances of conscious or unconscious psychical unrest which unrelate individuals and which may finally express themselves by structural tissue changes. The life we now lead is producing more and more individuals who are unhappy. The cause for this unhappiness can not be found with a microscope or a bronchoscope, and very frequently not by a certain type of psychiatrist who cares primarily to name the unhappiness. The thoughtful, patient, sympathetic medical adjuster, ever breeding trust and confidence, is the individual for such situations. Such tasks are difficult. They have their success in the silences and they often demand all there is of "both fortitude and delicacy".

The life of the biological adjuster necessitates an appreciation of specific values, of measurable incidents; but if the wholeness of this life is to be attained it must understand the importance of change and movement towards and away from that which is designated normal. The reason for these changes must be understood in order for adjustments to be made as life flows through different age periods as health and as disease. The learned physician as the biological adjuster of this life must be specific; he needs to measure and record and card-index, but over and above this type of knowledge he must have understanding of the unrelated individual as a whole which will enable him to apply specific measures in the hope of adjusting not a part, but an entity as a related and stabilized individual to that environment in which he has to blend himself in an adjusted, workable and a happy life.

Pott's Disease.—Tuberculosis of the spine is seen rarely nowadays, and its rarity should make one more alert, since to miss the diagnosis may lead to serious consequences.—Frank R. Ober, M.D.: *Lame Back*, J. M. Soc. State of New Jersey, 37:504 (October) 1940.

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NEW YORK

Mr. President, Honored Guests, Members of the Faculty, and Students of the Bowman Gray School of Medicine of Wake Forest College:

Since 1902 Wake Forest College has offered a two year medical course covering the laboratory and the preclinical subjects. At the end of these two years students have been compelled to seek admission to other schools in order to complete their medical education. This has not, it is true, been difficult of accomplishment. The Wake Forest College School of Medicine has been well and favorably known. Its academic standards have been high. Yet the need for transfer to other centers of medical education has had real and inherent disadvantages. The student body after the second year has been widely dispersed, and transfer to other institutions has unavoidably entailed not only adjustment to a new academic environment, but lack of continuity in the philosophy of medical education. The community and the state have lost young practitioners, since the recent graduate tends to settle in the general vicinity of the medical school in which he has been trained, provided suitable opportunities are available. These are important disadvantages.

Tonight we are assembled in this auditorium to signalize an event of great, and, we hope, far-reaching significance. The generosity of the Bowman Gray Foundation, and of residents of this city, together with the cooperation of the Boards of Trustees of Wake Forest College and of the Baptist Hospital, has permitted the College to expand the scope of its academic activities. In the future it will carry its students to the completion of their professional education. Hereafter the Bowman Gray School of Medicine of Wake Forest College will confer upon the members of its graduating class the degree of Doctor of Medicine.

The institution of this new school inevitably will exert a profound effect upon the

Address made at the opening of the Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, September 11, 1941.

community, upon the faculty, and upon the student body.

To the community, the gathering of medical teachers, and the bedside instruction essential to education in the art of medicine, imply greater, more effective, and more widespread medical care of the sick. The increasing emphasis placed upon the teaching of preventive medicine and public health practice promises greater protection of the community against transmissible and communicable diseases. And this, in turn, implies lessened incidence of disease and a lighter burden on government for the care of the indigent sick.

To the faculty, the opening of this new school presents a unique and challenging opportunity—an opportunity which comes to few medical teachers. Many of the special problems inherent in medical education today require imagination, courage, departure from certain highly conventionalized and pedantic educational concepts, and the substitution of newer philosophies, for satisfactory solution. The modern school of medicine inescapably has placed upon it serious responsibilities in the field of the mutual relationships between the academic institution and practitioners of medicine on the one hand, and the general public and government on the other. These have been created by such diverse factors as costs of medical care, uneven distribution of physicians and hospitals throughout the country, the responsibilities of state and city for the care of the indigent, and the responsibility of government, federal, state, and local, to protect the population against communicable and epidemic disease. This has led of necessity to the establishment of Federal, State, and Municipal Departments of Health, which, for effective administration, require not only the understanding of the public, but the closest cooperation on the part of schools of medicine and practitioners of medicine. Centers for medical education are slowly realizing that their responsibility to their students does not cease with the granting of the degree of Doctor of Medicine. There is a further obligation to provide, for physicians resident in areas remote from large hospitals and institutions of learning, the opportunity to receive advanced instruction in more recent methods of diagnosis and treatment. Progress in medicine and the ideal in medical education require the pursuit of sound research and scientific achievement. This

must be so balanced and so controlled that it provides stimulus and instruction to the student, yet does not detract from a high standard of clinical teaching. Finally, there is the challenge to the medical educator presented by the age-old question: should the school endeavor to offer a uniform and simplified system of instruction geared to the capacities of the less able members of each class—competent mediocrity such an objective might be termed—or should it strive to give the maximum to its most brilliant students and “deil take the hindermost”?

To the students, this school would seem to offer a unique educational opportunity. In terms of geographical medicine, North Carolina presents a meeting ground of diseases usually restricted to northern latitudes and certain special conditions endemic in the more southern states and in the tropics. Among the latter may be included such important entities as malaria, the dysenteries, endemic pellagra, hookworm disease, and endemic typhus fever, conditions rarely seen in the university hospitals in the North.

The opportunity to observe and to study the phenomena presented by such a diversity of clinical material implies not only a broader medical education, but the foundation for a sounder basic philosophy of medical practice. To those whose major interest lies in the philosophic aspects of the medical sciences, there are many immediately available problems which will amply repay energetic and competent research. Furthermore, the future growth and development of this medical school offer a field of opportunity in medical education for its competent graduates.

It is perhaps peculiarly appropriate that the month of September in the year 1941 should witness the opening of a new school of medicine. With the passage of each week the United States appears to be approaching more closely the brink of actual participation in the European conflict. Already the needs of our military and naval services have made large demands upon the medical profession. If, in the future, we are projected into the maelstrom, more than forty thousand physicians will be required by our armed forces. These of necessity will be withdrawn from civilian life and practice. Already the state of North Carolina has disproportionately few physicians.

It is appropriate that this state, which

has one of the purest and most direct traditions of Elizabethan culture, should take yet another step forward in the fields of the arts and the sciences. North Carolina has already made important contributions to medicine. In 1937 your sister school at Duke University made one of the great advances of modern medicine—the demonstration that nicotinic acid is a specific cure for endemic pellagra which has caused so much chronic illness and economic loss throughout the Southern states.

The economic and population factors of the state are peculiarly suitable. The mixture of racial groups presents particular problems in medicine and public health, and the distribution of population between urban and rural sections creates environmental factors important both in medical teaching and in public health administration.

The growth of modern medical knowledge may be divided into certain more or less well-defined phases which necessarily overlap to a greater or lesser extent. First came the era of study of the effects of disease upon the organic structure of the human body—the work of Laennec, Virchow, and the school of the great pathologists. Then came investigation into the causes of disease—the researches of Pasteur, Koch, and their successors which demonstrated the role of bacteria. Meanwhile clinicians were studying the manifestations of abnormality within the human body, classifying and codifying their observations, and constructing the clinical pictures of specific disease entities. This clinical research culminated in our own country in the work of Sir William Osler. More recently we have seen the extraordinary development of therapeutic medicine in the fields of antisera and of chemotherapy.

Despite the fact that this latter field has obviously been only superficially scrutinized, we have already entered upon still a new era in the development of the medical sciences. It is a matter of a generation only since the discovery of the first vitamin. In the last twenty years the number and significance of these specific food factors have been greatly elaborated. The term nutrition, not so long ago largely restricted to diet preparation, now implies a growing appreciation of the role of diet in the cause, the prevention, and the cure of many disease states, as diversified in nature as rickets, pellagra, cirrhosis of the liver, and experimental cancer in animals. The future we

may not read, yet it seems not improbable that from the study of nutrition will evolve the solution for many of the present day problems of senescence.

The responsibilities which rest upon this new school of medicine, faced by these manifold problems and opportunities, must be evident to all. The future is but cumulative judgment upon the present. This judgment will be based upon the scientific productivity of the school, the standards of excellence and accomplishment of its graduates in the varied fields of the medical sciences, and the discharge of the responsibilities of the school to the community. Yet the judgment of the future will be based not solely upon the standards maintained within these academic walls. The community has its own responsibility in the success of this new institution. Without the moral and material support implicit in a convinced public opinion, education strives in vain for progress.

I am sure I voice the feelings of this audience in the expression of my own—a brilliant future for the Bowman Gray School of Medicine of Wake Forest College.

The Prevention of Deafness.—According to statistics there are about fifteen million people in the United States with defective hearing. Of this number there are approximately three million children who hear less than one-half as well as the normal child. These handicapped, or potentially handicapped, individuals make a social, economic and, in the present emergency, defense problem that deserves the attention not only of otologists, but of the whole medical profession and general public.

The prevention of deafness, especially in children, and the rehabilitation of individuals already handicapped by deafness, is a problem that cannot be solved alone by the otologist who sees only a small percentage of this army of unfortunates. The other thousands do not seek aid, either because they do not know where and what to seek, or else they have given up in hopeless despair. The first step in solving this problem is the enlightenment of the public as to the frequency and seriousness of this affliction and the methods that may be used to overcome it.

In a program of education and rehabilitation the most active agency today is The American Society for the Hard of Hearing and its chapters throughout the country. This society was founded for the mutual assistance of its members and has the distinction of being the first group of handicapped people in the history of the world to organize for its own rehabilitation. However, its help is not limited to its members, but is willingly given without charge to any individual with impaired hearing. In giving advice on the selection of hearing aids, on instruction in lip reading, and on choosing vocations for the deaf, this society and its chapters are of invaluable aid. Their ability to help solve social and economic problems outside the scope of the otologist is of immense importance. — James E. Davis: *Help Conserve Hearing*, Connecticut State M. J. 5:754 (October) 1941.

THE CORRELATION BETWEEN BLOOD PRESSURE AND THE CONCENTRATION OF SULFOCYANATES IN THE BLOOD

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There are many references in the literature to the use of sulfocyanates for the reduction of high blood pressure. Almost all writers agree that sulfocyanates produce some reduction of blood pressure in a high percentage of cases but that other cases do not respond to treatment; also, that there is a considerable element of unpredictable danger in the use of sulfocyanates unless a careful study is made of the blood concentration of sulfocyanates in all patients under treatment⁽¹⁾.

Some of the earlier observers relied on the determination of sulfocyanates in the urine. Their results suggest that of sulfocyanates given by mouth or intravenously, 80 per cent may be recovered as sulfocyanates in the urine. In their computations, the difference between urinary output and the dosage of sulfocyanates represented the amount retained in the blood stream. There was no consideration of the amount manufactured in the body⁽²⁾.

Goldring and Chasis also reported high percentages of sulfocyanate found in all body tissues except bone in a patient who died of sulfocyanate poisoning, and showed in contrast the absence (by their methods) of sulfocyanates in some parts of the body of a patient who had received no sulfocyanates. More sensitive methods of analysis show sulfocyanates present in all body tissues.

Various methods of determining blood sulfocyanate content have been used. In all our earlier work, the blood protein was precipitated with trichloroacetic acid and filtered.

To the filtrate was added ferric nitrate to form the red ferric sulfocyanate. The Dubosque colorimeter was used for color comparisons with standard solutions of known strength. This technique is sufficiently accurate for determinations to guide therapy.

Results of Treatment

A study of patients being treated with sulfocyanates for hypertension in our clinic during the past several years showed that with a few significant exceptions there was a characteristic drop in systolic and diastolic pressures as the blood sulfocyanate level rose^(1a & b). When treatment was stopped, there was a gradual rise in the systolic and diastolic pressures, accompanied by a fall in blood sulfocyanate levels, until the former levels of blood pressure and blood sulfocyanate were reestablished. Subsequent periods of treatment and rest from treatment gave the same results. So striking and constant were these changes that this study was undertaken last fall (1940) to determine whether any correlation exists between natural blood sulfocyanate levels and blood pressure levels.

Selection of Patients

It was apparent that subjects of both sexes were needed for this study who would represent a good cross section of ages, blood pressure, and physical health, and who would be in comparable environments. It appeared to be important that all subjects be kept under control with regard to physical activity, rest, diet, and the use of tobacco. These precautions were prompted by the knowledge that sulfocyanates are end products of protein metabolism.

Two such groups were studied. Through the courtesy of Dr. J. W. Ashby, Superintendent of the North Carolina State Hospital, and of Dr. Felda Hightower, State Prison physician, we were given samples of blood from all persons admitted to both institutions. Samples were collected the second morning after admission, before breakfast and before any tobacco was used. On admission, all subjects were at rest for observation, and in both institutions the diet was ordinarily the same for each subject. Apparently we had as close a control over the environment, diet, and activities of the subjects as was possible.

At the State Prison, the diet contains an average of protein 145 Gm., fat 185 Gm., and carbohydrate 575 Gm., with an estimated

Presented before the Staff of St. Agnes Hospital, Raleigh, July 8, 1941, and the Conference on the Analysis and Interpretation of Biological and Nutritional Problems, North Carolina State College, July 11, 1941.

1. (a) Caviness, V. S., Unphlet, Pensley, Bell, and Satterfield: Sulfocyanates in the Treatment of Hypertension, North Carolina M. J. 2:283-288 (June) 1941.
- (b) Barker, M. H.: Blood Cyanates in the Treatment of Hypertension, J. A. M. A. 106:762-767 (March 7) 1936.
- (c) Nichols, J. B.: Pharmacologic and Therapeutic Properties of Sulfocyanates, Am. J. M. Sc. 170:733-747 (November) 1925.
2. (a) Smith, R. G. and Malco'm: Sulfur and Thiocyanate Excretion in Cyanide Poisoning, J. Pharmacol. and Exper. Therap. 40:437-471 (December) 1930.
- (b) Goldring and Chasis: Thiocyanate Therapy in Hypertension, Arch. Int. Med. 49:321-329 (February) 1932.

average daily intake of about 4500 calories. This is probably within average limits for laborers. At Dix Hill the diet contains an average of protein 131 Gm., fat 81 Gm., and carbohydrate 309 Gm., with an average daily intake of 2900 calories.

Methods

It was obvious that more accurate and sensitive methods of analysis would be necessary for these studies. The methods employed previously in our work were not suitable for determinations of the natural quantities of sulfocyanate found in the blood of patients not on sulfocyanate therapy.

The Evelyn photoelectric colorimeter with the proper filter was found to be suited for our purposes⁽³⁾. The filter of wave length 440 mu is the correct filter for this work. Two substances might interfere with these tests: hemoglobin and bilirubin⁽⁴⁾. No other substances appear to be present in the blood stream in sufficient quantity to produce demonstrable interference. The hemoglobin was removed from the samples by using fresh serum and prolonged centrifugation. Bilirubin was eliminated by the filter. Bilirubin has a wave length of 520 mu and is outside the wave length of the 440 mu filter used in this work. Tests on pure sulfocyanate with a Coleman Spectrophotometer determined the wave length to be used.

Serum protein was precipitated from fresh serum by 10 per cent trichloroacetic acid and filtered. Ferric nitrate was added to form a yellow to cherry red color. Color readings were made in the Evelyn photoelectric colorimeter. Several workers have reported on the accuracy and sensitiveness of this method. We found it to be quite satisfactory in all samples encountered. The accuracy of the work is further shown in the rechecks as given in table 1.

Controls

Studies of 241 cases have been made. In many cases, duplicate or triplicate determinations have been done.

Of the subjects, 147 were prisoners and 94 were mental cases. At the prison the ages ranged from 15 to 72; at the State Hospital

TABLE 1
Duplicate determinations of blood samples taken from same patients on different days

No.	mg.KCNS/100cc. blood serum		Difference
	1	2	
48	1.46	1.56	0.10
22	0.53	0.72	0.19
66	0.81	1.18	0.37
37	2.04	1.85	0.19
71	0.36	0.44	0.08
16	1.28	1.51	0.23
69	1.71	1.90	0.19
64	0.86	1.09	0.23
74	1.46	1.46	0.00
86	1.14	1.23	0.09
153	0.58	0.86	0.18
32	0.72	0.81	0.09
43	1.23	1.32	0.09
87	1.32	1.09	0.23
38	1.32	1.28	0.04
45	1.32	1.18	0.14
107	1.23	1.00	0.23
103	0.58	0.63	0.05
149	0.63	0.76	0.13
19	1.18	1.18	0.00
67	0.95	1.38	0.43
100	1.04	0.86	0.18
129	0.67	0.72	0.05
72	0.40	0.67	0.27
26	1.56	1.56	0.00
140	0.63	0.58	0.05
134	1.04	1.00	0.04
131	1.04	1.14	0.10
42	0.72	0.81	0.09
Sum			4.06
Mean			0.14

Most of these samples were replicated within one week. All samples used were taken from the prison.

the ages ranged from 21 to 83. At the prison, all the subjects were males, slightly more than half being white. At the State Hospital, all the patients were white and all except three were males.

At the prison, practically all subjects were robust and in good physical condition except those with hypertension. At the State Hospital, some of the subjects were debilitated and in very poor physical condition when studied on admission.

A limited number of determinations have been made on clinic and office patients. The results are in line with the figures of the two groups discussed in this report. However, owing to lack of proper controls over clinic and office patients, they have not been included in this report.

As a further control, all determinations have been made by the same chemist using a photoelectric colorimeter.

Classification of Findings

Unfortunately, there are no accepted exact standards of normal or abnormal blood pressure. It is rather generally conceded

3. Evelyn, K. A.: A Stabilized Photoelectric Colorimeter with Light Filters, *J. Biol. Chem.* 115:63-75 (August) 1936.
4. (a) Ginsburg, Emanuel, and Benotti, Norbert: Determination of Sulfocyanates in Serum After the Administration of Its Salts, *J. Biol. Chem.* 131:503 (December) 1939.
- (b) Germeinhardt, K.: The Sulfocyanate Content of Plants, *Chem. Abstracts* 33:2181, 1939.

that a systolic pressure of 140 is too high. In order to evaluate the findings in this work, pressures have been divided into four groups in order to establish a working basis and not in any effort to set up arbitrary standards. For the purposes of this study, any systolic pressure below 106 has been termed low; pressures from 106 to 130 have been termed normal; pressures from 131 to 140 have been termed border-line; and all pressures above 140 have been considered high. It is recognized that such figures may be questioned and that isolated cases might not properly be so classified. For example, a person who has had a sustained extremely high pressure might develop symptoms of low blood pressure were the systolic pressure reduced too rapidly to 150. But these figures apply to untreated cases, and the division into groups is for the purpose of analyzing the results of this study. A further division into smaller groups would not affect the curves materially.

To determine the stability of the blood sulfocyanate level for any individual, repeat tests were made of many individuals at intervals of a week (table 1). These subjects were selected at random.

Results

In the prison group there is definitely more difference between the means of the sub-groups than could be expected from random sampling from the same population. There is less than one chance in a hundred that the means of the sub-groups could vary as much as these vary were they drawn by random sampling.

In the Dix Hill group the sub-group means do not differ more than might be expected. However, by forming one group below 130 and another group above 130, means of 1.093 and .892 are obtained which do differ significantly. This division is virtually a separation of hypertension cases from normal and hypotension cases. With such a grouping very similar results in means are found in the prison, Dix Hill and total groups.

In the prison group it will be noted that two-thirds of the original observations will, on the average, lie within the range of plus or minus .427 above or below the mean of sub-groups, while half lie within the probable error range of plus or minus .288.

TABLE 2

<i>Grouping</i>	<i>No. of Patients</i>	<i>Blood KCNS Average</i>	<i>Mean</i>	<i>Pooled standard deviation</i>	<i>Probable error</i>
Dix Hill BP					
— - 105	10	1.048	1.093	.463	.312
106 - 130	34	1.106			
131 - 140	12	.858	.892		
141 - —	38	.904			
Prison BP					
— - 105	9	1.424	1.255	.427	.288
106 - 130	91	1.238			
131 - 140	19	1.071	.970		
141 - —	28	.905			
Total BP					
— - 105	19	1.226	1.206	.441	.297
106 - 130	125	1.202			
131 - 140	30	.986	.930		
141 - —	65	.904			

Similarly, of the entire study two-thirds lie within the range of plus or minus .441 and half lie within the range of plus or minus .297.

In these studies the results have been tabulated by groups. Obviously, the personal equation is so pronounced that studies of individuals would be confusing. There are many factors other than sulfocyanate concentration in the blood that influence blood pressure levels. Chart 1 shows the results of the studies of prisoners and chart 2 shows the curve of the mental patients. Chart 3 shows a comparison of the spread of actual determinations with the curves of averages as plotted for the group in chart 1. In the prison group the average blood sulfocyanate level for prisoners with low pressure was 1.424 mg. per 100 cc. of blood (table 2); for the normal pressure group it was 1.238 mg. per 100 cc. of blood; for the border-line group it was 1.071 mg. per 100 cc. of blood, and for the high pressure group it was 0.905 mg. per 100 cc. of blood. In the mental patients the low pressure group showed 1.048 mg. per 100 cc. of blood; for the normal pressure group it was 1.106 mg. per 100 cc. of blood; for the border-line group it was 0.858 mg. per 100 cc. of blood, and for the high pressure group it was 0.904 mg. per 100 cc. of blood.

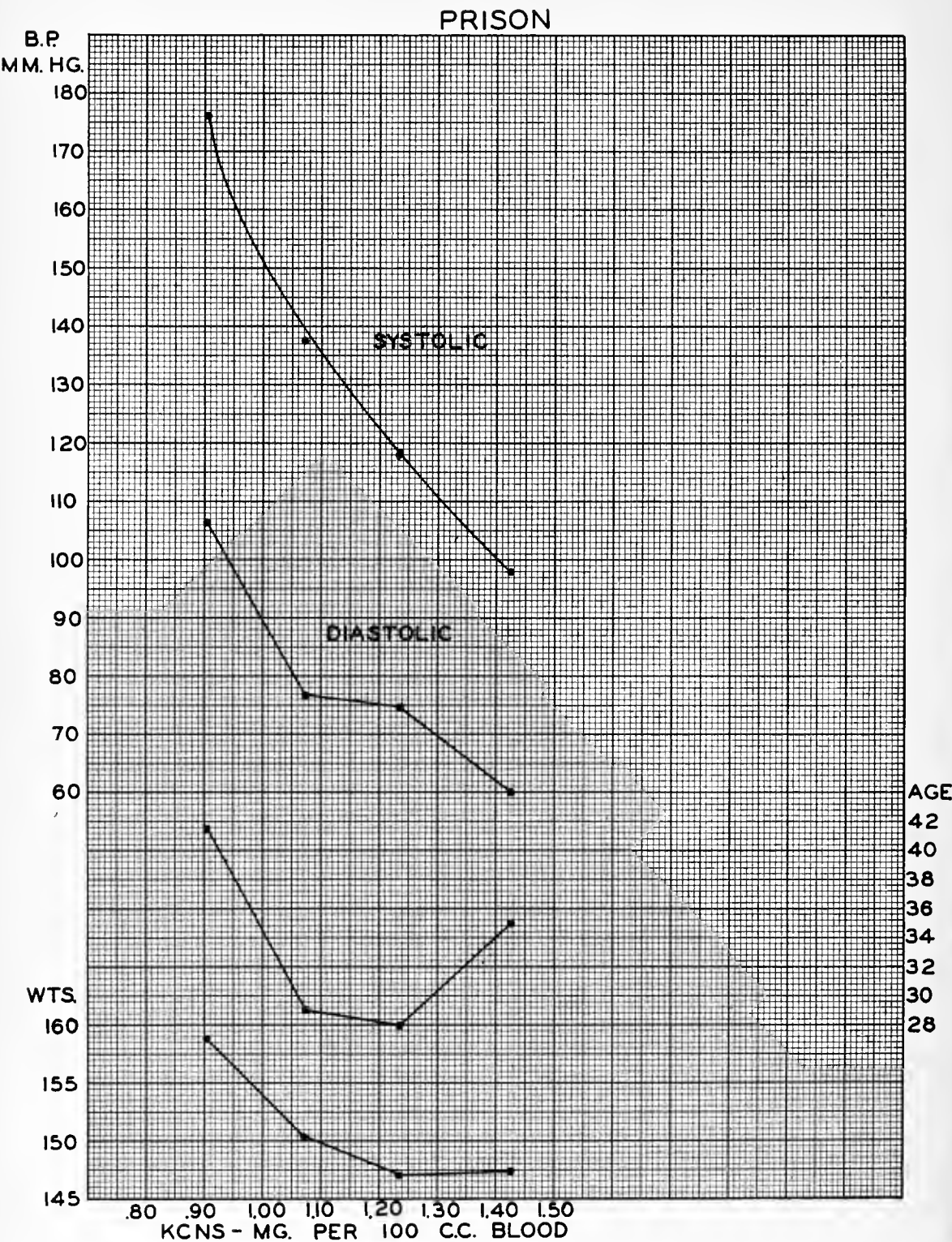


Chart 1. Results of the studies of prisoners at the State Prison.

DIX HILL

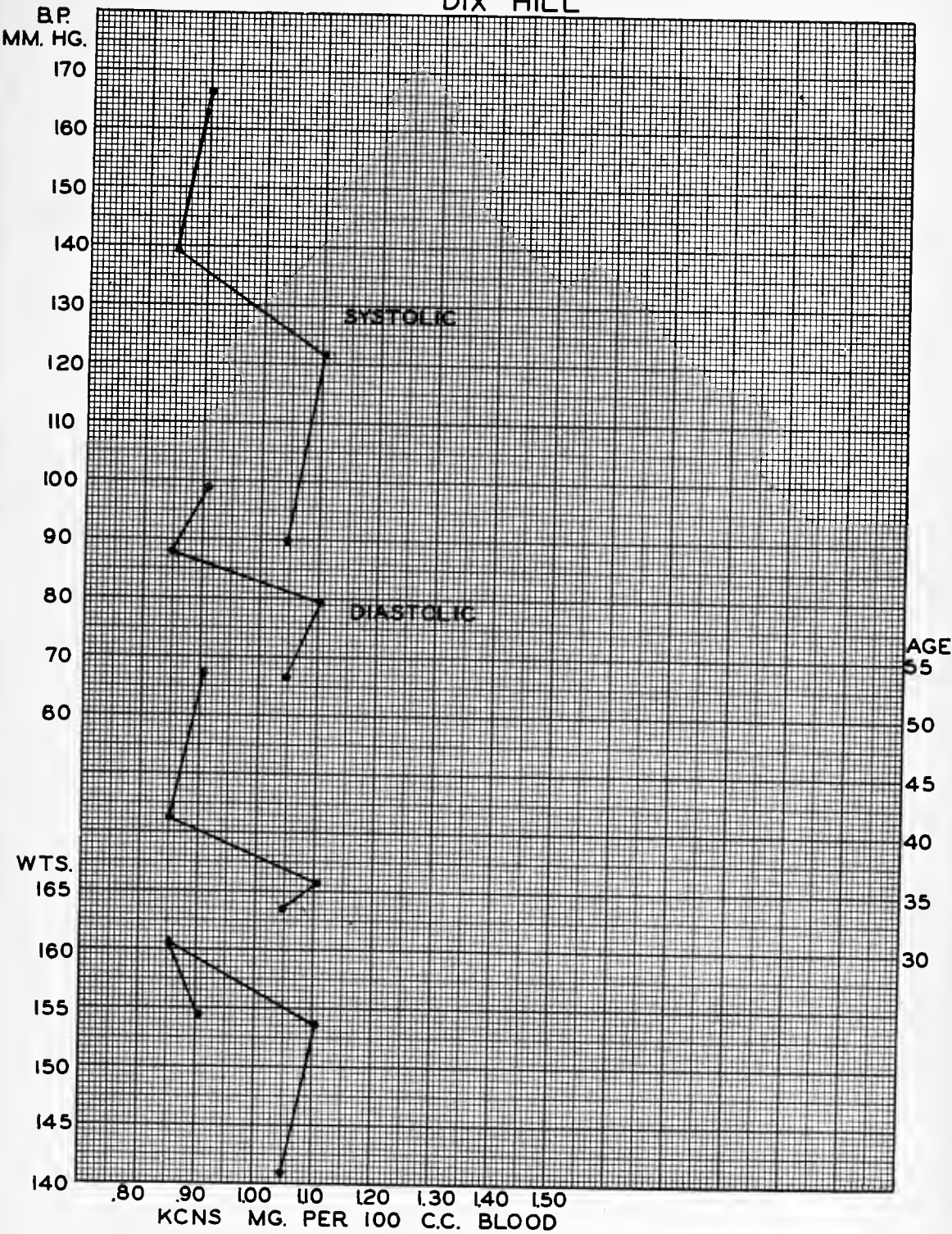


Chart 2. Results of the studies of patients at Dix Hill.

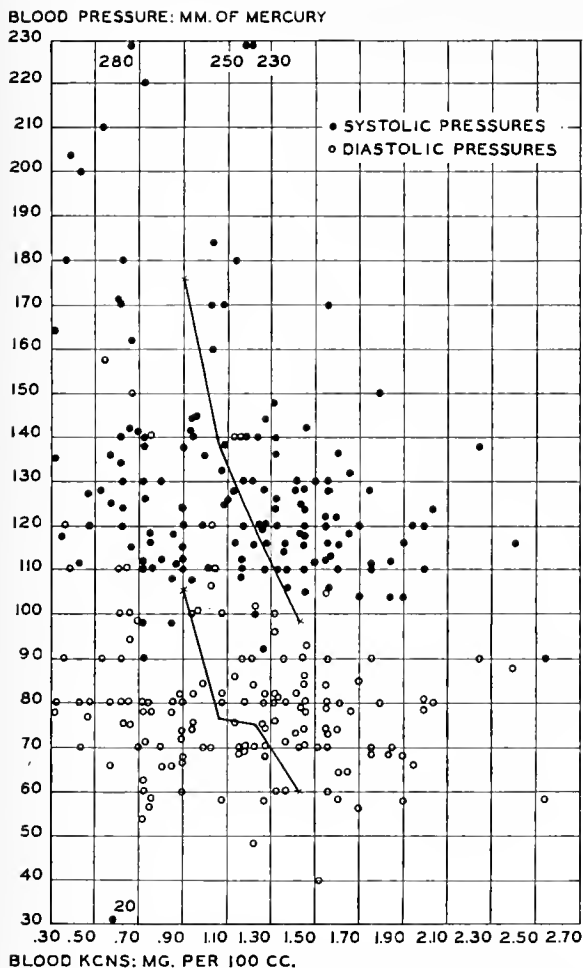


Chart 3. Comparison of the spread of actual determinations with the curves of averages as plotted for the prison group in Chart 1.

It will be noted that the normal and hypertension groups show practically identical results in the two institutions (table 3). This fact is true in spite of the wide differences in diet, physique, and the general physical activities of the inmates of the two institutions. The discrepancy in the hypotension groups may be due to the physical condition of the mental patients. At the prison, the ages of the hypotension group ranged from 22 to 60. Physically, these prisoners did not appear to differ from members of the other groups. At the State Hospital, the ages of the hypotension group ranged from 18 to 42, but the average age was greater than in the hypotension group at the prison. The hypotension group of mental patients consisted of patients who were debilitated; several were dehydrated. Several deaths occurred shortly after specimens were collected.

The State Hospital group shows plainly that hypertension is associated with a lower blood sulfocyanate concentration than is normal pressure or hypotension. The curve is somewhat more irregular than the curve of the larger group of more normal individuals studied at the prison. From these results, it appears probable that studies of larger groups should tend to straighten the curve.

The definite similarity between systolic and diastolic pressure curves, weight curves, and age curves for the four groups in each institution is noteworthy.

The table of results of repeated tests of individuals is very interesting (table 1). It shows an average variation of 0.14 mg. per 100 cc. of blood from week to week for various unselected individuals. This is within ordinarily accepted limits of experimental error and compares closely with the relatively fixed readings of patients on treatment with a constant dose of sulfocyanate.

Discussion

From these studies, it is learned that sulfocyanates are naturally present in the blood stream in a concentration of 0.31 mg. to 2.55 mg. per 100 cc. of blood (expressed as amounts of potassium sulfocyanate). The term "naturally present" is used because the normal amount is not known. However, if the normal blood pressure figures of 106 to 130 used in this study be accepted, the average of normal blood potassium sulfocyanate levels would be 1.20 mg. per 100 cc. of blood. The actual figures of normal blood pressure are not important for this study, since slightly raising or lowering the accepted limits would have little effect on the average figure of 1.20 mg. per 100 cc. of blood as given above.

In the blood, nitrites are present in the proportion of one part in five billion⁽⁵⁾. Nitrites are products of protein metabolism in the body. They have been used extensively for the control of hypertension, but the action is fleeting. Headaches are frequently caused or intensified by the use of nitrites. As a result, the use of nitrites is of questionable value except in emergencies.

Sulfocyanates are present naturally in much higher concentration in the body. Their therapeutic use makes patients more comfortable, reduces systolic and diastolic pressure in almost all cases, and often relieves headaches and dizziness due to hyper-

5. Krantz, Carre, and Foreman: Alkyl Nitrites, *J. Pharmacol. and Exper. Therap.* 64:309 (November) 1938.

TABLE 3
Average of the results from Prison and Dix Hill patients

Group	No. of Patients	mg.KCNS/ 100 mil. Serum	Blood Pressure		Age	Weight lbs.	Height inches
			Systolic	Diastolic			
Prison							
Hypotension	9	1.424	97.8	60.0	34.9	147.7	67.6
Normal	91	1.238	118.0	74.8	28.0	147.0	67.4
Border-line	19	1.071*	137.4	76.3*	29.1	150.2	67.7
Hypertension	28	0.905	176.0	106.2	41.5	158.8	67.7
Dix Hill							
Hypotension	10	1.048	89.9	66.8	33.5	140.9	67.2
Normal	34	1.106	121.8	79.6	35.7	153.7	69.0
Border-line	12	0.858	139.4	88.2	41.2	160.5	69.2*
Hypertension	38	0.904	166.7	99.1	54.3	154.5†	67.5†

*—Average using one less number of patients.

†—Average using two less number of patients.

tension. The action is constant and stable and there is no tendency to produce a tolerance to the drug^(1a & b).

A consideration of investigative work done on blood pressure control by various workers suggests that the problem is complex and that no substance or group of substances is responsible for human blood pressure control. Our work has led us to the conclusion that there is a delicate balance of control of human blood pressure. Normally, it is well balanced and blood pressure remains constant. In disease, it may become out of balance in either direction. On one arm of the balance may be placed some complex factor, probably some substance or substances activated by some secretion from the adrenals, forming an active and potent pressor substance which normally maintains the proper tone of the musculature of arterioles and probably of at least some capillaries. In some abnormal conditions there is an excessive effect of this pressor substance, and blood pressure tends to rise; or this substance may be deficient, with a possible resultant hypotension. On the other arm of the balance may be placed some depressor substance. In the human body nitrites are present in very minute amounts, one part in five billion, and they do exert a fleeting depressor effect when used for therapeutic purposes. But their practical value is open to question from a therapeutic standpoint. Sulfo cyanates are present in the blood stream in much larger amounts, 0.31-2.55 mg. per 100 cc. of blood, and exert a much more satisfactory therapeutic effect than nitrites.

This work shows that low blood pressure is associated with a high average blood

sulfo cyanate concentration, that high blood pressure is associated with a low average blood sulfo cyanate concentration, and that border-line and normal pressure cases occupy intermediate positions; and it suggests very strongly, even if it does not prove, that sulfo cyanates are nature's depressor substances which help to stabilize the balance between hypertension and hypotension.

It is not to be inferred that the blood sulfo cyanate level constitutes the whole story of blood pressure control. There is a considerable group of individuals presenting hypertension associated with a high blood sulfo cyanate level. We believe that in these cases there is an over-activity of pressor substances and that a higher dose of potassium sulfo cyanate may be required to raise the blood sulfo cyanate level sufficiently high to swing the balance back to normal.

In our work, we have observed patients with early hypertension and a low blood sulfo cyanate content who on small doses of sulfo cyanate showed a rapid drop in blood pressure, symptomatic relief, and a rise in blood sulfo cyanate to 2.5, 2.8, or 3.0 mg. per 100 cc. of blood. In these cases, it has not been necessary to raise the blood concentration above the natural level seen in other cases. The conclusion is that these patients are not being supplied by nature with enough sulfo cyanates to furnish normal depressor action.

On the other hand, some patients with a higher natural blood sulfo cyanate concentration require much larger doses of sulfo cyanate, and some may not show satisfactory results from treatment. We ascribe two causes for such imperfect results:

First: An overproduction of pressor sub-

stances in the body.

Second: Fibrosis of the musculature in arterioles which prevents or limits depressor activity through inability of the muscle to relax. Late stages of this process cause failures in treatment by this method. Such cases are illustrated by old syphilitics, paralytics and other patients with advanced arteriosclerosis.

There are many factors involved in our statistics that we cannot at this time explain. We have been unable to show any correlation between sex or race and the blood sulfocyanate concentration. Age and weight appear to have some influence, though it is not so definite as the blood pressure relationship. Height does not appear to be a factor. We have not demonstrated any tobacco factor, and are of the opinion that any tobacco influence noted in the past may have been due to the tobacco smoke present in saliva. We do not believe it could have any appreciable effect on blood sulfocyanates.

Conclusions

Studies of 241 individuals who had not received treatment show:

1. That each individual has a fixed level of blood sulfocyanate which does not appear to change from week to week.
2. That natural blood concentrations of sulfocyanates range from 0.31-2.55 mg. per 100 cc. of blood.
3. That the average blood sulfocyanate level for each blood pressure group varies inversely with the blood pressure.

These findings suggest that sulfocyanates are the most important natural depressor substances in the human blood.

Emotional Factors in Hypertension. — We have paid altogether too much attention to physical measurements in hypertensive disease. While it is undeniably true that the size of the heart as determined by the x-ray, the height of the blood pressure as determined by the sphygmomanometer, the condition of the retinal vessels as determined by the ophthalmoscope, and the state of renal function as determined by the various clinicopathologic tests are all absolutely essential to the understanding of the hypertensive individual, they are only the beginning and not the end of the study. We must try to understand the total personality of the individual who has hypertension or who seems destined to develop it. It is the study of emotional factors which may provide us with the key to the successful management of the hypertensive individual.—Edward Weiss: Renal Involvement in Hypertensive-Vascular Disease, Medical Annals of the District of Columbia, 9:421, December, 1940.

VIRUS DISEASES AFFECTING THE EYE AND ADNEXA

W. BANKS ANDERSON, M. D.

This paper is, in the main, limited to a discussion of personal experiences with patients presenting in the ocular system certain symptoms and signs. These phenomena may or may not be associated with other peculiar symptoms and signs in other systems of the body. They have, in the evolution of medical knowledge, long been identified as characteristic peculiarities of a disease group recognized hundreds of years before the isolation of the first virus. Indeed, there is even now no uniformity of opinion as regards the exact nature of the agents inciting this group of diseases.

Rivers, in the Lane Medical Lecture of 1939, has the following to say about the nature of viruses:

"Infectious diseases are caused by certain kinds of active agents or their toxins. For convenience the agents are divided into the following groups: protozoa, fungi, bacteria, spirochetes, rickettsiae, and finally the viruses. What is there about viruses that causes investigators to set them apart from the groups mentioned above? In as much as the exact nature of viruses is not known a direct and definite reply to such a question cannot be made. Indeed the virus group of diseases was well on the way to formation before much was known about the nature of the inciting agents. This grouping depended more on the nature of the infected cells than on the nature of the inciting agent. It is well known that agents of different characteristics frequently produce almost identical disease pictures. Therefore, similarities in the clinical and pathological pictures observed in the virus groups of maladies, viz., hyperplasia, hyperplasia followed by necrosis, necrobiosis, and other characteristics which set these diseases apart from other morbid processes, are best accounted for on the basis of an intimate association between the infecting agents and their host cells; i. e., an intracellular parasitism or if one prefers intracellular autocatalytic

Read before the First General Session, Medical Society of the State of North Carolina.

From the Department of Ophthalmology, Duke University Hospital.

fabrication instead of on the nature of incitants themselves."

Rivers goes on to state, "Some of the viruses may be minute highly parasitic micro-organisms, the midguts of the microbial world, capable of reproduction only within the susceptible host cells; others may represent forms of life more or less unfamiliar to us; and others may be fabrications of their host cells aided by the processes of autocatalysis."

Whatever the nature of the infecting agent, there has been a grouping of diseases on the basis of a certain broad similarity in the pathological picture. In general virus diseases exhibit marked tissue specificity, either neurotropic or dermatotropic. The pathological picture is said to be constant. There is hyperplasia followed by necrosis, necrobiosis and inflammation. Regardless of the acuteness of the disease, the inflammatory reaction is characterized by mononuclear cells. Rivers is of the opinion that the inflammatory reaction is not the result of the invasion by the virus, but rather the reaction to the previously infected, now devitalized, cell. If the cell involved is incapable of division and multiplication the pathological picture is due to degeneration. The closest relationship exists between the infecting agent and the host cell. It is believed that all viruses are regenerated within a susceptible living cell. This explains the more or less characteristic picture of virus diseases. Intracellular changes, inclusion bodies and ballooning degenerations, resulting from the virus-host relationships, were among the first peculiarities to be noted. The smaller elementary bodies forming the larger inclusion bodies were later demonstrated, at least in fowl pox, to be the etiological agent.

On the basis of tissue specificity virus diseases affecting the eye fall into three groups:

1. Those having a neurotropic selectivity.
2. Those having a dermatotropic selectivity.
3. Those having an affinity for uveal tissue, perhaps a chromatic specificity (mesodermatropic).

Neurotropic Group

The encephalomyelitis which occurs unexpectedly in a patient satisfactorily convalescing from a recent acute febrile disease is one of the most distressing complications plaguing the life of the physician. The gen-

eral symptomatology need not be elaborated here; suffice it to say that the manifestations are protean, varying with the localization and intensity of the infection. Since there is no regeneration in the central nervous system, one of the chief characteristics of virus infection, that of proliferation, is missing. In contrast the process of necrosis becomes exaggerated. In encephalomyelitis the characteristic lesion is the demyelination of the white matter. The virus has the peculiar power of causing rapid demyelination around the blood vessels and around the walls of the ventricles. It is to be noted that this is the area of greatest damage in Devic's and Schilder's diseases. This similarity is stressed by those who hold that neuromyelitis optica (Devic) and encephalitis periaxialis diffusa (Schilder), as well as disseminated sclerosis, are due to virus infection.

Acute disseminated encephalomyelitis has been observed in association with the following diseases:

1. Variola
2. Varicella
3. Measles
4. Epidemic parotitis
5. Pertussis
6. Vaccinia
7. Antirabic inoculation

Although this classification may have no basis in fact other than the common symptomatology, it nevertheless seems permissible to group the manifestations induced or provoked by these diseases into the class known clinically as "acute disseminated encephalomyelitis of Westphal".

There are two theories of the mechanism of infection in these cases. One is that the antecedent infection weakens the normal barriers into the central nervous system, so that the virus, already present in endemic proportions, may pass through them. The other is that the virulence of the virus is increased by some alteration in its structure due to the association with the antecedent infectious agent. The eye symptoms noted as manifestations of this disease, which is at least clinically within itself an entity, are:

1. Paralysis of the cranial nerves.
2. Amaurosis followed by temporary achromatopsia.
3. Papilledema.

The optic nerve is peculiarly vulnerable in this process, the demyelination usually taking place anteriorly to the chiasm involving

principally the maculopapular bundle. If the cord is involved in the cervical region, pupillary irregularities suggestive of or producing Horner's syndrome are in evidence. The disease has been observed in one instance after measles. In this case there was papillitis, central scotoma and diplopia associated with paralysis of the lower limbs. This patient recovered. The mortality as a complication of measles is said by Ford to be 50 per cent. The disease has been observed in one case following mumps. In this patient, a physician, the central nervous system symptoms preceded the actual swelling of the parotids. In this case there was only a transitory and questionable swelling of the nerve head; no other ocular symptoms were present. One case was observed following antirabic inoculation. This patient, a medical student, had loss of accommodation in one eye for several months following recovery.

Other viruses having an affinity for the central nervous system are those producing (1) choriomeningitis, (2) epidemic encephalitis and (3) poliomyelitis. The eye signs in choriomeningitis are said to be rare and to differ in no way from those appearing in any other meningeal irritation. One case has been observed in which the papilledema and rather rapid loss of vision necessitated decompression. The protean paralyses following encephalitis require no comment. Paralyses of the extra-ocular movements following poliomyelitis are rare, but may occur in the cerebral and cerebellar forms of the disease.

Dermatotropic Group

Lesions of the eye and adnexa in diseases either proven or presumed to be due to infection by viruses having a dermatotropic tendency may be grouped according to the type of lesion produced.

First are the lesions of skin and mucous membranes characterized by vesicular formation. The diseases producing such a picture are:

- A. Herpes simplex
 - 1. Dendritic keratitis
 - 2. Keratitis punctata superficialis
 - 3. Keratitis disciformis
 - 4. Parenchymatous keratitis
- B. Herpes zoster
- C. Vaccinia

Second are the lesions of the skin and mucous membranes characterized by follicu-

lar formation. Diseases producing such pictures are:

- A. Inclusion blennorrhea
 - 1. New born
 - 2. Adult
 - 3. Swimming pool conjunctivitis
 - 4. Acute follicular conjunctivitis of Beal
- B. Trachoma
- C. Parinaud's syndrome associated with a positive Frei test (ocular lymphogranuloma venereum)
- D. Molluscum contagiosum

The dendritic ulcer of the cornea, which is a typical herpetic vesicle modified by the anatomical structure of the cornea, is the most typical ocular lesion of the vesicular group. Duke-Elder⁽¹⁾ says:

"Herpes simplex cornea, first described by Horner in 1871 as a clinical entity, has probably many clinical manifestations. It is primarily a superficial epithelial infection characterized by the development of minute epithelial opacities and fissures which may be followed by vesiculation and necrosis, the ultimate clinical picture being that of a dendritic ulcer."

This lesion may occur spontaneously as an isolated lesion or it may be associated with herpetic lesions elsewhere. In 60 per cent of the cases there is a definite antecedent history of infection, usually upper respiratory. Fuchs and other European investigators placed great stress on the importance of malaria as an antecedent infection. In the general experience of American clinicians, malaria, no more or less than any other febrile disease, permits, by lowering bodily resistance, herpes to appear in individuals who already harbor the infection.

The clinical picture varies, but usually begins with a sharply painful eye and totally or partially anesthetic cornea. Examination with the slit lamp in the early stages reveals minute discrete superficial white dots with the tendency to localization about the terminal ends of nerve fibers, about which there is epithelial bedewing. If these dots remain discrete, the lesion is described as a superficial punctate keratitis. Epidemics have been described in which this type of lesion was the universal expression of the disease. If the small vesicles coalesce in rows or extend irregularly from the focus, fissures of

1. Duke-Elder: *Textbook of Ophthalmology*, St. Louis, C. V. Mosby, 1932-37, v. 2, p. 1894.

the epithelium occur which give the typical picture of the dendritic ulcer when stained with fluorescein. The process, despite the corneal anesthesia, is rather painful. It may persist for months and is, because of the lacrimation and lid spasm, quite troubling. As with the common cold there is no immunity; on the contrary, once infection has been established there is a definite tendency to recurrence. Both sexes are attacked equally before the age of 16, but males are much more susceptible in adult life. In Gunder-son's series of 221 cases, of 46 which occurred before 16 years of age, 23 were in males and 23 were in females. Only one case in the series was bilateral. The tendency to recurrence is shown by the fact that the 221 patients gave a history of 466 attacks, averaging over 2 per person.

The treatment consists of the following rather drastic routine. The cornea is dried by holding the lids back with a speculum. The involved epithelium which has undergone epidermolysis (a characteristic of virus infection) is removed with a small sterile cotton applicator. Tincture of iodine is then applied to the denuded surface of Bowman's membrane, care being taken not to have the excess iodine spread over the adjacent conjunctiva. The iodine is neutralized by 4 per cent cocaine. If the lesion does not heal rapidly—and few do—, time, effort and expense are spared by doing a tarsorrhaphy—i. e., causing a partial closure of the lids by temporarily suturing the scarified lid margins. The sutures may be removed in three to four days, leaving the diseased eye, in need of protection because of the loss of corneal sensation, with its physiological covering. This constant approximation of the diseased avascular cornea with the vascular palpebral conjunctiva serves to raise the temperature of the cornea and promote healing. Permanent immunity has been reported following inoculation with vaccinia. As a complication herpetic iritis may accompany the first attack, and may return without involvement of the cornea. Disciform keratitis is thought to be another and possibly a late form of the disease. When the virus of this lesion is inoculated into the rabbit's cornea, encephalitis may occur; but encephalitis following herpes simplex in man has never, according to Duke-Elder, been known to occur.

Superficially resembling herpes febrilis is the much more serious disease, herpes zoster

ophthalmicus. Goodpasture has thought that possibly this virus is only a more virulent strain of the herpes simplex. It is difficult to understand why the zoster virus is primarily neurotropic, affecting the gasserian ganglion with secondary cutaneous manifestations, while simplex is primarily dermatotropic. The zoster establishes permanent immunity in 99 per cent of the cases, while simplex never establishes immunity. The close similarity between zoster and chicken pox would also seem to set it apart from simplex.

Herpes zoster usually occurs in the spring, and is most frequently associated with epidemics of chicken pox. It usually occurs in elderly persons, but cases have been reported in children. The disease is of sudden onset, with temperature reaction and severe neuralgic pain along the course of the ophthalmic division of the fifth nerve. Shortly after the pain there is a blushing of the skin supplied by this division, accompanied by a local elevation of the temperature. Later there is edema with vesiculation. Before vesiculation the condition may be mistaken for erysipelas. The vesicles are at first clear, then become cloudy and rupture, with the formation of pits which remain permanent. The process lasts for three to six weeks, during which time there is severe neuralgic pain characterized by an unusually severe burning and throbbing associated with exquisite tenderness of the skin. As a rule the pain subsides with the eruption, but it may persist for years with little decrease in intensity. The affected area is usually left with considerably diminished sensitivity, which, when associated with the continuing neuralgia, produces the distressing "anesthesia dolorosa."

Jonathan Hutchison, who in 1866 first described the condition, noted that "eye trouble is frequent if the side of the tip of the nose is involved." The distribution of the lesion varies, but the frontal branch of the ophthalmic nerve is always involved. The lacrimal and nasociliary branches frequently escape, but when they are affected ocular complications are more common. In 50 per cent of the cases of herpes zoster ocular complications occur. They are keratitis, scleritis, iridocyclitis, ocular palsies and optic neuritis. One case has been observed in which an iritis with plastic exudate and secondary glaucoma developed. Treatment may be summarized as follows:

1. Pituirtrin is said to relieve pain. (In a limited personal experience this drug has been ineffective.)
2. Convalescent serum is said by Gunderson to exert a markedly beneficial effect.
3. Tarsorrhaphy.
4. Any bland ointment to skin lesions.

Accidental vaccination of the conjunctiva is rare, but does occur. In this connection it is well to remember that while scarification of the skin is necessary for inoculation, no such trauma seems necessary in the conjunctiva. One case has been observed in which the conjunctiva was accidentally inoculated by fingers contaminated with pus from the skin inoculation.

Diseases Producing Follicles

Follicles are pathognomic of no one disease. The follicle is not a disease entity. It is a tissue reaction to irritation. The essential lesion comprising the follicle is a dense localized infiltration of the subepithelial tissue by large mononuclear lymphocytes. This forms the characteristic lesion. The mononuclear lymphocytes have poorly staining nuclei and are situated in the center of the follicle. About them the peripheral area is occupied by a dark ring of small deeper staining lymphocytes. There is another large cell with irregularly shaped vacuolized cytoplasm, phagocytic in function and histolytic in nature. These are the "Körperchenzellen" of Leber. Plasma cells occur in the surrounding tissue.

Perhaps the conjunctival follicular disease of most general interest is the inclusion blennorrhea of the new born, the gonococcus and other virulent organisms having been excluded. (This is also known as ophthalmia neonatorum.) This disease is noted in the new born three or four days or one to two weeks after birth. Attention is first called to the condition by the sero-mucoid discharge with accompanying swollen lids. When everted these lids show the formation of fine irregular follicles. When these follicles are scraped, the epithelial cells are found to contain inclusion bodies. The preauricular gland is swollen but painless. The diagnosis is made usually by exclusion, since it seems scarcely feasible to scrape the

mucous membranes for diagnosis of such a benign condition. There seems to be no question but that the disease is contracted in the passage of the baby through the genital tract, and that the etiological agent is a virus. This same etiological agent, or one quite similar in immunological reaction, also attacks adults, producing the so-called swimming pool conjunctivitis. While this is not necessarily contracted in the swimming pool, several epidemics have been definitely traced to such a source. This consideration, with the seasonal incidence of the disease, justifies the continued use of the term. The disease runs a chronic course and may leave scattered fine scars, but usually heals without sequellae. Mild antiseptics may be used. Sulfanilamide may be of use, but in view of the mildness of the symptomatology it seems scarcely justified unless trachoma is suspected. Inclusion blennorrhea and swimming pool conjunctivitis have, in fact, been classified by several prominent investigators as a para or genital trachoma, standing in the same relationship to this disease as does the para group of the typhoid series to typhoid infection.

There is a chronic follicular conjunctivitis which differs somewhat in appearance and clinical course from that described above. The etiological agent is unknown, and it is mentioned here only to complete the picture. In the same category should be mentioned the acute conjunctivitis of Beal. In this latter type neither organism nor inclusion bodies have been found, but the disease is felt by most investigators to be of virus origin.

By far the most important of all the follicular diseases of the eye is trachoma. Duke-Elder introduces his chapter on trachoma with the following statements:

"Trachoma . . . an immense subject in literature replete with hypotheses, discussions and polemics in a world pregnant with suffering, disability and blindness—is a chronic contagious disease of the conjunctiva and cornea characterized by subepithelial cellular infiltration with a follicular distribution, the natural resolution of which is cicatrization involving potentially much visual disability and gross deformity. Its importance as a source of human suffering, as a cause of blindness, and as a national economic loss over large tracts of the world's surface, is second to

none among the diseases of the eye, or indeed among diseases of all kinds."

North Carolina has been fortunate in the low incidence of this disease. (In a limited experience it would seem that in this respect our position is precarious.) There is one well-established focus. At the present time three cases of trachoma among the hosiery mill workers of Burlington are under observation. It is believed that the disease came in with the influx of skilled hosiery workers from the Philadelphia area. It is said that the disease also occurs among the Indians in Robeson and contiguous counties, and a few cases from this area have been observed. Cases are also reported among the mountaineers near the Tennessee line.

Trachoma was recognized as a clinical entity at least as far back as 2000 B. C., and there has been, until the advent of sulfanilamide, little change in the treatment handed on from antiquity—namely, copper sulfate, curettement of the follicles, and then more copper sulfate. Recently with astonishing success the United States Public Health Service has been using sulfanilamide in acute cases in the western Indian reservations. The success of this drug in the treatment of this disease definitely strengthens the arm of those who contend that trachoma is not a virus disease.

Recently Macnie⁽²⁾ reported a series of cases of follicular conjunctivitis resembling Parinaud's conjunctivitis, which he stated demonstrated that: "The virus of lymphogranuloma venereum is one of the causes of the oculoglandular syndrome of Parinaud." It is possible then that this fourth venereal disease may ultimately prove of some importance in ophthalmology. Perhaps in view of his studies it may be worth while to subject any patient with follicular conjunctivitis of unknown etiology to the relatively simple Frei test.

For completeness another disease of the lids produced by a filtrable virus must be mentioned. This is the molluscum contagiosum. Occasionally actual follicular conjunctivitis occurs in this disease. The disease is self-limiting, but recovery may be aided by excision of the growth and expression of the contents of the papilloma with cauterization.

Lesions of the Eye Characterized by Proliferative Granulomatous Lesions Resembling Tubercles, But Without Central Caseation and Without Demonstrable Tubercle Bacilli, Having an Affinity For Uveal Tissue

There is an interesting and puzzling group of cases in which the uveal tract—that is to say, the pigment bearing choroid, ciliary body and iris—become involved in a granulomatous proliferative process resembling a tubercle but without the tubercle bacillus and without the central caseation said to be typical of the tubercular infection. These syndromes involve other organs and are of considerable general interest. They may be classified as follows:

1. Uveoparotid fever.
2. Sarcoid of Boeck.
3. Uveitis with alopecia, vitiligo, poliosis and dysacusia.
4. Harada's syndrome (encephalitis phenomena, dysacusia delirium, vomiting, leukoderma, poliosis, alopecia).

Uveoparotid fever is characterized by a bilateral low-grade painless inflammation of the interstitial tissue of the parotid associated with a chronic subacute bilateral uveitis. With this disease there is often an associated paralysis of the cranial nerves and other general systems. Other ocular symptoms include keratitis, optic neuritis, polyuria and dryness of the mouth. The disease is self-limiting. The lesions have a tendency towards a spontaneous resolution.

Closely akin to the uveoparotid fever is the syndrome known as Boeck's sarcoid. The pathological picture, like that of uveoparotid fever, is a benign lymphogranulomatous lesion with a tendency to spontaneous resolution, resembling the tubercle, but without central caseation. There is a low-grade temperature, enlargement of lymph glands, and bizarre chest plates. The uveal tissue of the eye may be involved. One case was observed in which the lids were so involved that leprosy was seriously considered.

It should be remembered that no claim is made that the diseases of this group are of known virus etiology. It must be remembered that they have many of the characteristics of tuberculosis, and by some are classified as para-tuberculous. That is to say, the reaction is an allergic response to a tubercle strain of low virulence in an individual of

2. Macnie, J. P.: Ocular Lymphogranuloma Venereum, Arch. Ophth. 25:255 (February) 1941.

high immunity sensitive to the protein of the organism.

Harada's syndrome is a disease of unknown etiology, but probably due to virus infection. It occurs most often in Japan, though cases have been reported in this country. The characteristics are posterior segment disease of the eye involving total separation of the retina, but with eventual reattachment of function due to spontaneous reattachment. It is associated with alopecia, vitiligo, poliosis, leukoderma, dysacusia and encephalitic phenomena. The disease is self-limiting. Two cases have been observed which presented some features of this disease. One, the son of a physician, had previous to the ocular complications developed areas of vitiligo. The other developed joint symptoms, dysacusia, vitiligo and uveitis. Both recovered spontaneously.

Conclusion

There have been presented some prominent ocular symptoms and signs which are part of the picture of definite syndromes involving other organs of the body, and which are therefore of general interest. It is not claimed that all these disease entities have been definitely proven to be due to viruses. Some, particularly the group discussed under the heading of uveitis, are by many investigators thought to be due to some form of tuberculosis. Whatever the nature of the infecting agent the field of investigation has been largely unexplored. It is hoped that, when these syndromes have been brought to mind, closer search for other evidences of systemic disease will be considered when one is confronted with an inflamed eye.

The Cost of Psychotherapy. Psychotherapy . . . takes time and effort and must be paid for, yet when we look into the time, effort and expense that have been expended by many patients or by institutions taking care of these patients in the usual medical approach, we realize that an hour or two well spent in a discussion of the life situation of such patients would obviate a great deal of this other expense . . . It is amazing what the total expense of a great many unnecessary studies amounts to so far as the institution is concerned, and of course the same thing is true in the case of private patients. I think the day is close at hand when we will regard some of these thick-chart patients, this poly-physical approach, with the same amusement and disdain with which we now regard the polypharmacy of a bygone age in medicine.—Edward Weiss: *The Treatment of Illness of Emotional Origin by the Internist*, *Annals of Internal Medicine*, 14:434 (September) 1940.

SEROLOGICAL SURVEY OF DRAFT REGISTRANTS

JOHN H. HAMILTON, M. D., *Director*
State Laboratory of Hygiene

RALEIGH

On the morning of October 16, 1940, in seventy-nine of North Carolina's one hundred counties, health workers or their representatives were waiting for volunteers who would submit specimens of blood in the largest syphilis survey ever attempted in North Carolina. The health workers had been provided with 100,000 specimen containers. The volunteers were young men registering under the 1940 Selective Service Act.

The days preceding this eventful day had been busy ones at the State Laboratory of Hygiene and the Division of Epidemiology. Specimen containers must be prepared and distributed; instructions and record forms must be made available. It was now up to the local health workers and the volunteers. Those of us in Raleigh had expected October 16 to be a day of watchful waiting—waiting to find out whether we secured 10,000 specimens or 75,000. However, we waited only for an hour or so before reports began to pile in that the supply of specimen containers was exhausted. In many instances special messengers were dispatched to Raleigh for additional containers.

453,729 men registered under this Selective Service Act. Specimens from 136,756 of these men were received by laboratories.

The methods used in assembling 136,000 specimen containers and the technical preparations made for testing so large a number of specimens might be of interest to another laboratory director, but probably to no one else. Plans had been made for the examination of 75,000 specimens; the budget had been set up on that basis. An 80 per cent increase over expectations necessitated sending SOS calls to other laboratories. All of the local laboratories connected with Health Departments in North Carolina responded to our call for help. The Laboratory of the State Highway Commission at Central Prison volunteered. Our greatest help from the standpoint of volume was from the Laboratory of Dr. Harry Eagle in Baltimore. Your State Laboratory of Hygiene examined approximately 92,000 specimens.

Read before the North Carolina Public Health Association, Pinehurst, May 19, 1941.

The personnel in our serological group was increased from ten to thirty-two. Nearly every member of our staff assisted this group in some way—many working nights, Sundays and holidays. Serum was separated from clots as rapidly as possible and sent to a freezer locker for storage until such time as the specimens could be examined. The last specimen was reported on December 18. As nearly as we could tell by observation, the stored serums were in satisfactory condition for examination.

The twenty-one counties which sent no specimens had no organized health department at the time of the registration. Only one specimen was sent from the Currituck-Dare Health District. The small Negro population in Alleghany, Avery, Burke, Caldwell, Cherokee, Clay, Graham, Haywood, Jackson, Swain, Macon, Transylvania, Wilkes and Yancey counties did not yield a sufficient number of specimens for data from these counties concerning the Negro population to be of value. Counties supplying specimens from less than 10 per cent of the draft registrants are as follow: White—Durham, Franklin, Guilford and Mecklenburg; Negro—Buncombe and Guilford. With these exceptions it would seem that in other counties we should have a fairly representative cross-section of the young men between the ages of 21 and 35 inclusive.

Specimens from the white men gave less than 0.5 per cent positive reactions in six counties; 0.5 to 1.0 in nine counties; 1.0 to 1.5 in thirty counties; 1.5 to 2 per cent in fifteen counties; 2 to 3 per cent in ten counties; 3 to 4 per cent in three counties. The specimens from white men in Gaston County gave slightly more than 10 per cent positive reactions. This was definitely out of line. Specimens sent from Gaston County by Selective Service Boards have given a little over 3 per cent positive reactions. Perhaps Dr. Rhyne has an explanation.

With the specimens from Negro men a much higher percentage of positive reactions were found. Of the counties sending in significant numbers of specimens seven counties had from 5 to 10 per cent positive reactions; seventeen had from 10 to 15 per cent positive reactions; 21 had 15 to 20 per cent positive reactions; and 17 had more than 20 per cent positive reactions.

The following news item was released

TABLE 1
Serological Survey of Draft Registrants
October 1940

Number Specimens Sent to Laboratory	136,417
Number Unsatisfactory	1,700
Number Examined	134,717
Number Giving Negative Reaction	120,743
Number Giving Doubtful Reaction	2,424
Number Giving Positive Reaction	11,550
Percentage Positive Reactions	8.57

(White Men)

Number Specimens Sent to Laboratory	77,039
Number Unsatisfactory	890
Number Examined	76,149
Number Giving Negative Reaction	73,974
Number Giving Doubtful Reaction	712
Number Giving Positive Reaction	1,463
Percentage Positive Reactions	1.92

(Negro Men)

Number Specimens Sent to Laboratory	57,944
Number Unsatisfactory	807
Number Examined	57,137
Number Giving Negative Reaction	45,438
Number Giving Doubtful Reaction	1,694
Number Giving Positive Reaction	10,005
Percentage Positive Reaction	17.5

(Indian Men)

Number Specimens Sent to Laboratory	1,434
Number Unsatisfactory	3
Number Examined	1,431
Number Giving Negative Reaction	1,331
Number Giving Doubtful Reaction	18
Number Giving Positive Reaction	82
Percentage Positive Reactions	5.7

Wednesday, February 5, 1941, by the United States Public Health Service, Washington:

"More than 5,000 cases of syphilis have already been found among Selective Service candidates, Assistant Surgeon General R. A. Vonderlehr of the U. S. Public Health Service said at a Regional Conference on Social Hygiene and National Defense in St. Louis today. He presented the findings of a preliminary tabulation of 120,000 blood tests and physical examinations for syphilis performed on Selective Service candidates in 23 States during November and December, 1940.

"Rates among the States range from 7 to 114 per 1000 men examined, Dr. Vonderlehr reported. He divided the States into four groups according to the extent of the syphilis problem they presented (table 2).

"It will be noticed, the Assistant Surgeon General pointed out, that the two groups with the highest average rates are composed of Southern States. Comparison shows that they also were among those States which had the highest syphilis rates for men drafted in the last World War."

"Direct comparison of rates for syphilis then and now cannot be made because rou-

TABLE 2

Preliminary Returns on 120,751 Men Examined For Syphilis by Selective Service Boards November and December, 1940

(Rates per 1,000 men examined, based on positive blood tests and clinical findings)

Group I—Average Rate 7 Per 1,000

North Dakota, Minnesota, Wisconsin, Rhode Island, Nebraska, Utah

Group II—Average Rate 19 Per 1,000

Wyoming, Michigan, Colorado, New Jersey, Ohio, Montana, New York, Kansas

Group III—Average Rate 61 Per 1,000

West Virginia, Oklahoma, Maryland, Tennessee, North Carolina*, Alabama

Group IV—Average Rate 114 Per 1,000

Georgia, Louisiana, Mississippi, Florida
* Based on 133,117 Registrants.

tine serologic tests were not performed on drafted men in the 1917-19 period, but, Dr. Vonderlehr emphasized, 'we can see nevertheless that after 20 years the geographical distribution of the problem is practically the same.'

"The Public Health Service reported that several States, notably North Carolina and Alabama, provided blood tests on a voluntary basis to men who registered under the Selective Service and Training Act. The preliminary rate reported for North Carolina, for example, was 78 per 1000 men examined. Some 200,000 tests from Alabama are in the process of being tabulated.

"Insofar as the 5,000 infected men are rejected or deferred as unfit for immediate military service, they remain wholly a civilian problem—a problem of treatment for the health department and medical profession of the community in which they live. And they are of the age group of young men who may be employed in defense industries,' Dr. Vonderlehr concluded."

The data which we have presented are provisional. They were assembled primarily by the tally-sheet method. The United States Public Health Service will at some future date give us a more accurate and more complete statistical analysis of this material. The men actually called by Selective Service Boards will give us a much fairer sample of our population than was obtained from the volunteers participating in this survey. The fact remains, however, that specimens from 136,000 men cannot fail to supply valuable information. However, information was not the sole objective of this survey. Perhaps a considerable number of men are now being

treated for syphilis as the result of the survey. You who are on the front line of our public health program can testify as to the accomplishments of the survey from the standpoint of placing patients with syphilis under treatment. If any substantial number of men have been rendered non-infectious, the valiant efforts of local health workers and members of the staff of the Board of Health will not have been in vain.

Abstract of Discussion

Dr. Carl V. Reynolds (Raleigh): Dr. Hamilton has given you a resume of the selective draft serological tests made in North Carolina. It may be of interest to this group to know that the United States Public Health Service planned to do serological tests on 1,500,000 selectees in one day. A great many of those present thought that that was an impossible procedure. That would mean that we had 143,000 precincts in the United States to man with clinics, doctors, nurses and equipment, with only 155,000 doctors in the United States. On the face of it, it was certainly not practical.

North Carolina's plan was to have about 290 of our offices organized and manned by specially qualified personnel to do the job, not in one day but in four weeks. We secured the tests of 136,000 out of the 404,000 available, and we could have gotten 300,000 if we had had the equipment.

I believe firmly that we are now beginning to show results in our campaign against syphilis for North Carolina, as gigantic as that proposition seemed to be in the beginning. We had 10,000 examinations made at the penitentiary and at other prisons throughout the state and all the cases were put under treatment. This last year we treated something over one million, four or five hundred thousand persons for syphilis. Of the inmates now coming to the penitentiary, very few who come with syphilis have not been under treatment, and a great many are coming there cured. The percentage is much lower. The percentage when we took the findings was 8.5 of the total.

Dr. Cooper this morning illustrated a far reaching effect of our syphilis program when he stated to you that formerly more than 13 per cent of prenatal cases were found to be syphilitic, and the percentage has now dropped, I believe, to 10. That is something for us to be proud of. I firmly believe that in the near future we will cut syphilis down into the class of diphtheria or typhoid fever. It simply means consistent, diligent work, with a well-defined organization to carry it through.

Dr. R. E. Rhyne (Gastonia): Mr. President, I think we need some explanation in regard to the percentage in Gaston County. Of course these specimens were taken in the Health Department, and the class that came to our Department to give the blood were of the lower strata of the county. I think that might possibly explain the high percentage in the county.

Dr. Edward Humphrey Herring (Raleigh): The fact that the incidence in young whites was less than 2 per cent was astounding to me. It demonstrates statistically that our syphilis problem is mainly among the Negro and Indian population.

Dr. J. W. Williams (Willamston): I'd like to ask Dr. Hamilton about the idea that malaria causes a positive Wassermann reaction. Have you any data to help us disprove that only Negroes have malaria?

Dr. E. R. Hardin (Lumberton): We have had

quite a number of these Wassermanns reported positive on the first test where there was no definite history, and negative on the second test, and in a great many cases on a third. I wonder if that is the experience of other men.

Dr. Hamilton: Dr. Fellows has a paper tomorrow afternoon in the Section on Public Health and Education which deals with malaria as a cause of falsely positive serological tests. It is now generally accepted that all patients with malaria have a positive serological test at some stage of the malaria, and about 15 to 20 per cent of the general run of them will give positive reactions.

RELATIONSHIP OF MALARIA TO SEROLOGIC TESTS FOR SYPHILIS

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For some time after the Wassermann test was introduced in 1907 it was considered as highly specific for syphilis. Recently medical literature has contained many articles which tend to show that other diseases and conditions may cause a positive serologic test for syphilis. Eagle¹⁾ stated in his textbook, *LABORATORY DIAGNOSIS OF SYPHILIS*: "The ideas current in the early days of the Wassermann reaction persist today, perpetuated by constant reiteration in a growing literature, despite the fact that many of these ideas have been shown to be in error. One cannot reconcile the general belief that the Wassermann is a nonspecific reaction frequently encountered in nonsyphilitic persons, with the fact that in actual practice patients are regularly treated for syphilis solely on the basis of a positive serologic test, and in the absence of any clinical manifestations."

It is now generally believed that several diseases other than syphilis will give positive serologic tests—notably, infectious mononucleosis, trypanosomiasis, relapsing fever, leprosy, and malaria. The last of these diseases, malaria, is, as you all know, quite prevalent in some sections of North Carolina, and individual cases may at times present themselves to any physician in the state. This disease will not only cause false positive serologic reactions on individual tests, but it will also cause discrepancies between

the different tests performed and on different specimens from the same patient submitted during the course of the illness.

In 1935 the United States Public Health Service published results of a serologic survey of laboratories of the originators of various tests in general use. The results (table 1) show false positives in malaria to range from 8.6 to 20.6 per cent, with an average of 14.4 per cent.

Many health officers and physicians have encountered the above-mentioned phenomena in their clinics or private practice and have sometimes been unable to interpret the findings. Because of these uncertainties, it was decided to make a study of the effect of malaria upon the serologic tests for syphilis from North Carolina patients as performed by the North Carolina State Laboratory of Hygiene. The study was carried out in Onslow County, because it is in the malarious section of the state, and also because, at the time of the study, there had not been a great amount of public health work done in the county directed towards the control of either syphilis or malaria. Inasmuch as syphilis is more prevalent in the Negro race, we limited our study to this group.

The securing of blood samples was carried out between August 1, 1939, and April 1, 1940. A Negro physician and nurse obtained all blood specimens and filled out the questionnaire. They resided in the county during the entire survey. A house-to-house canvass was made in order to get as many as possible of the Negroes residing in the county. In addition blood specimens were taken at schools, churches, picnics, or wherever a crowd congregated. Approximately 80 per cent of the entire Negro population was tested. The county was divided into eighteen districts in order to determine the geographic distribution of both syphilis and malaria.

Venous blood was secured for the serologic test and a finger puncture was made in order to secure a "thick smear" for the malaria examination. All serologic specimens were examined by the Kline diagnostic test. Those serums which gave positive or doubtful reactions with this test were also examined by the Eagle complement fixation test. These tests were performed by the North Carolina State Laboratory of Hygiene. Malaria smears were stained by the Giemsa tech-

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1. Eagle, Harry: *Laboratory Diagnosis of Syphilis*, St. Louis, 1937, C. V. Mosby Company, p. 301.

TABLE 1
1935 SEROLOGICAL STUDY*
Results of Serologic Test for Syphilis on Blood Specimens from Presumably Nonsyphilitic Patients
with Various Conditions
Percentage of Specimens Giving Positive Reactions

	Normal	Leprosy	Tuberculosis	Malignancy	Fever	Malaria	Jaundice	Pregnancy
Brem		44.	1.9	1.7	2.2	14.3		
Eagle	2.0	72.	1.9	1.7		12.1		
Hinton	0.7	40.	5.7	3.3	2.3	11.1		1.9
Johns	3.3	58.	5.7		4.3	11.4	2.0	3.7
Kahn		60.	1.9			11.4		
Kline		66.	1.9			14.3		
Kolmer		64.	2.0	1.6	2.2	19.4		
Kurtz	3.3	76.	7.7		2.2	16.7	3.9	1.9
Rytz and Lufkin.....	1.3	70.	7.5	9.7	8.9	11.1	2.0	
Rein .....	.7	68.	1.9			19.4	3.9	
Ruediger .....	.7	62.	7.5	1.6	2.2	20.6	2.0	3.8
Williams		42.	1.9	1.6		17.1		
Weiss .....	.7	52.				8.6		

* Supplement No. 1 to Venereal Disease Information.

nique, and examined by a skilled technician. When the Laboratory reported positive or doubtful serologic reactions for syphilis or the presence of malaria parasites, an additional specimen was secured and the tests repeated. Intervals between tests varied generally between six and ten weeks. In some instances where there was a discrepancy in the results, as many as four specimens were taken from one person. All repeat tests included serologic tests for syphilis and search for malaria parasites. Tests were also repeated whenever hemolysis or breakage occurred.

A questionnaire was filled out for each person tested. This contained information which we believed might throw some light on the possible relationship of syphilis to malaria.

Prevalence of Malaria

In a total of 3,244 persons tested we were able to find malaria protozoa in the blood of 101—3.1 per cent. We were able to do a second, third, or fourth test in 92 of these 101 patients with malaria protozoa. The plasmodium falciparum (estivo-autumnal) was found in 93.1 per cent, and the plasmodium vivax (benign tertian) in 6.9 per cent of those infected. Parasites were found again in 38 of the 92 persons who were re-examined.

History of Malaria

In the entire group studied 33.7 per cent gave a history of having had malaria. In

those persons who had had malaria 38.7 per cent of them had malaria in the year prior to our study, 23.4 per cent one to five years, and 37.9 per cent over five years previously. In this group 45.8 per cent had been treated by physicians and an equal number had treated themselves with various home remedies. It was surprising to find that only 3.7 per cent used patent medicines and 1.0 per cent purchased quinine. Three and seven-tenths per cent of the group stated that they had had no treatment. (Table 2.)

Serologic Findings

As was anticipated, many discrepancies were found in the group who had demonstrable malaria parasites in the blood (table 3). When only the first test is considered, there were 32.4 per cent false positive and an equal percentage of false doubtful reactions.

In individuals without demonstrable malaria parasites in the blood we found also an appreciable number of false serologic reactions. There were 13.0 per cent false positives and 11.8 per cent false doubtful reactions. The North Carolina State Laboratory of Hygiene has participated in the national serologic surveys, and its work is considered satisfactory. We must conclude, therefore, that many of the individuals tested in this malarious region, who did not have demonstrable parasites in the blood, did have enough reagin to cause false positive and doubtful serologic tests. There seems to be

TABLE 2

Malaria History of Population Surveyed Showing Time Period in Which Malaria Was Acquired and Type of Treatment		
	Number	Per Cent
Individuals Questioned	3244	100.0
No History of Malaria	2150	66.3
History of Malaria	1094	33.7
History of Malaria in Past Year.....	423	38.7
History of Malaria 1-5 Years Ago....	256	23.4
History of Malaria Over 5 Yrs. Ago	415	37.9
Treatment Received:		
Physicians	501	45.8
Home Treatment, Herbs, Etc.....	501	45.8
Patent Medicines	40	3.7
Quinine	11	1.0
None	41	3.7

no doubt of the value of repeat serologic tests in such an area. Examination of a thick blood smear for malaria parasites in conjunction with the serologic test seems advisable, although the absence of malaria parasites should not be considered conclusive evidence that a patient has syphilis if the blood serologic reaction is positive.

These findings are not inconsistent with findings of other investigators. Kitchen and co-workers⁽²⁾ have shown that all apparently nonsyphilitic persons who are given therapeutic malaria will at some time or other have a false positive serologic reaction during the course of the malaria. They have also shown that the positive reaction may continue for as long as sixty-six days after the parasites disappear from the blood.

Effect of Malaria and History of Malaria Upon Final Serologic Classification

In order to arrive at a final serologic classification of each person, serologic findings were compared with clinical history and the previous serologic and treatment history. Each case was then classified as positive, doubtful, or negative. The findings are shown in table 4.

When these figures are condensed, it is noted that positive serologic findings were twice as frequent in persons who have had malaria as in those that have never had it. Doubtful reactions were over five times as

TABLE 3

Changes in Serologic Results Between First and Second Tests of Malaria and Non-malaria Patients				
Individuals with Two Serologic Tests	Without Malaria		With Malaria	
	Number	Per Cent	Number	Per Cent
First Test Positive or Doubtful	421	100.0	37	100.0
No Change in Serology	316	75.1	13	35.1
Remained Positive	280	66.5	11	29.7
Remained Doubtful	36	8.6	2	5.4
Change in Serology	105	24.9	24	64.8
Positive to Doubtful	9	2.1	2	5.4
Positive to Negative	46	10.9	10	27.0
Doubtful to Negative	41	9.7	11	29.7
Doubtful to Positive	9	2.1	1	2.7
First Test Negative..			53	100.0
No Change in Serology			51	96.2
Remained Negative			51	96.2
Change in Serology			2	3.8
Negative to Positive			1	1.9
Negative to Doubtful			1	1.9

common in cases with demonstrable malaria parasites in the blood as in those without this finding.

If all degrees of positive findings, positive and doubtful, are combined and a graph is made showing age grouping of all persons with and without a history of malaria, a rather interesting picture is presented. In persons who have not had malaria the graph follows the usual curve for the age prevalence of syphilis—high in the middle age groups and low in both younger and older ages. The curve resulting from plotting the positive and doubtful reactions in those persons who have had malaria continues to rise over practically the entire age distribution. With the present uncertainty as to just how much influence malaria may have upon serologic tests for syphilis it is rather hazardous to attempt to explain these findings. However, may it not be possible that once a person has had malaria he may retain sufficient reagin to cause false positive serologic tests for many years?

2. Kitchen, S. F.; Webb, E. L.; Kupper, W. H.: The Influence of Malaria Infections on the Wassermann and Kahn Reactions, J. A. M. A. 112:1443 (April 15) 1939.

TABLE 4
Comparison of the Serologic Results of Persons With Malaria, Persons With a History
of Malaria and Persons Without Either

	SEROLOGIC RESULTS							
	Positive		Doubtful		Negative		Total	
	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
With Malaria	11	10.9	24	23.8	66	65.3	101	100.0
With History of Malaria.....	156	14.2	61	5.6	877	80.2	1094	100.0
Without Either	154	7.5	78	3.8	1817	88.7	2049	100.0
TOTAL	321	9.9	163	5.0	2760	85.1	3264	100.0

Conclusions

The results of this survey show an incidence of 9.9 per cent positive serologic tests for syphilis in a large group of North Carolina Negroes. In this same group 3.1 per cent had demonstrable malaria protozoa in their blood predominately of the estivo-autumnal type.

When malaria parasites were present in the blood, disagreement between first and second serologic tests occurred in 64.8 per cent of the cases in which the first test showed a positive or doubtful reaction. Disagreement in cases where no parasites could be found was 24.8 per cent.

The advisability of concurrently examining a thick blood smear for malaria parasites of all persons on whom a serologic test for syphilis is performed is demonstrated.

Finally, I should like to urge that no patient be diagnosed as syphilitic when the only evidence of this disease is one positive serologic test. To treat such a patient for syphilis not only is unnecessary and dangerous to the patient, but may be grounds for a malpractice suit.

Abstract of Discussion

Dr. John H. Hamilton (Director State Laboratory of Hygiene): It is refreshing to listen to a paper prepared by a public health worker burdened with administrative problems and to learn that he has found time to indulge his curiosity.

Dr. Fellows has investigated a problem. He has uncovered information concerning it. We know more now than we did before Dr. Fellows made his report about the possibilities of obtaining false positive serologic tests for syphilis in patients who are or have been infected with malaria. I wish to congratulate him and express my appreciation of the work which he has done.

Unfortunately, malaria is not the only disease which will cause falsely positive serologic tests for syphilis. In addition to the list shown in the first table of Dr. Fellows' paper, it is now generally recognized that infectious mononucleosis is probably as potent a factor as malaria in producing falsely positive serologic tests for syphilis. Bernstein, during a five year period, observed 60 cases of infecti-

ous mononucleosis. Serologic tests for syphilis were performed on 37; 6, or 16 per cent, gave positive reactions. Infectious mononucleosis occurs much more frequently than we expected. It has no seasonal nor geographical limitations. Patients presenting typical blood pictures frequently do not have enlarged glands nor detected fever. More careful study of this condition in its relation to serologic tests for syphilis is being made.

Many domestic animals give positive serologic tests for syphilis. Probably 100 per cent of cows, dogs and sheep are positive by most of our recognized tests; 75 per cent of rabbits; 90 per cent of the hogs and 60 per cent of the chickens. The reaction found in these domestic animals and in man that is not infected with syphilis is termed the biologic type of reaction, as contrasted with the syphilitic type of reaction found in persons infected with syphilis. In the biologic type of reaction the reagin titer is generally low, likely to fluctuate, and usually fades within thirty to sixty days.

Falsely positive serologic tests for syphilis constitute one of the principal worries of a laboratory worker. We naturally have a horror of contributing to the treatment of a person who does not have syphilis. We urge, therefore, that when a clinician gets a positive report on a person who has no history, sign or symptom of syphilis, he send a second specimen immediately as a check on human error—his own as well as that of the laboratory. If the second specimen is reported positive, it is desirable to wait thirty days and get a third specimen, sending portions of the blood drawn at one time to two or more laboratories. If this third specimen is reported positive, he should wait an additional thirty days and send fourth specimens to several laboratories. Biologic falsely positive reactions are likely to become negative during the sixty day interval between the second specimen and the fourth.

Research workers are busily engaged in developing and testing so-called verification procedures. We hope that some of these will eliminate falsely positive reports. In the meantime we urge that clinicians have a proper lack of confidence in reports of serologic tests.

Colonel Schwartz: I have had some opportunity to study serologic tests over a number of years, and have worked in the Philippine Islands, where we have in addition to malaria and infectious mononucleosis the disease of yaws. One of the difficult problems is that of the patient with a positive serological reaction, and a positive test for malaria also. The patient may have syphilis as well as malaria. Even after treating the malaria, we don't know how long the disease may give a positive serologic reaction.

I have one suggestion to make to those who are doing serologic tests and have the opportunity to do research work. There is an approach which is

not being used to any great extent, and that is what is generally termed the quantitative serologic test. It can be done rather simply. Anyone who takes the trouble in the laboratory to do quantitative tests will find it a great field. The quantitative test is a titration of the serum for the amount of reaction or of the substance which causes the test to become positive.

Dr. Robert B. Lawson (Chapel Hill): The same problem of falsely positive reactions comes up in the diagnosis of congenital syphilis. Doing titrated Wassermanns will prevent the false diagnosis of syphilis in an infant.

Dr. Green: How long should you wait before making a test for congenital syphilis?

Dr. Lawson: In the absence of the stigma of congenital syphilis, one can wait for as long as two to three months. The routine is ordinarily to make a Wassermann test before the baby is discharged from the hospital, another at one month, another at six weeks, and another at eight months.

Dr. Fleming: I don't think we should go too far and get the idea that the serologic test for syphilis is no good whatsoever. I don't believe that the tremendously higher percentage of positive serologic tests in Negroes is due to biological false positive, although that is a problem and has to be taken into consideration in diagnosis. It has been shown that the percentage of serologic tests varies with different economic levels in the Negro race just as it does with the white race. I think Dr. Fellows' work emphasizes again the need for clinical corroboration of laboratory evidence. Dr. Eagle has run a series in which blood tests were done on 40,000 college students. From that series it seems very clear that the incidence of these so-called biological false positives was not greater than one in four thousand. Of course, in malaria districts the incidence would be higher than that.

The Detection of Syphilis.—In the detection of syphilis a negative serologic test does not preclude a positive diagnosis. From 20 to 30 per cent of patients with syphilitic aortitis or its complications have a negative serologic reaction. The diagnosis in these individuals must rest entirely on the history and physical examination. A history of syphilis or the description of an illness consistent with it must be sought by detailed direct questioning. The disclosure on physical examination of stigmas involving other organs raises a strong presumption in favor of the diagnosis.—Herrman L. Blumgart, M.D.: *The Detection and Treatment of Cardiovascular Syphilis*, New England J. Med. 223:444 (September 19) 1940.

Cardiovascular Syphilis.—By the time the diagnosis of cardiovascular syphilis can be based on frank clinical evidence, serious and often irreparable damage has already occurred. Any conspicuous reduction in the incidence of the disease depends primarily on the detection and adequate treatment of early syphilis in general, for cardiovascular syphilis occurs in less than 1 per cent of cases adequately treated early in the course of the disease. Thus in practically every case the clinical diagnosis of cardiovascular syphilis is evidence of previous neglect.—Herrman L. Blumgart, M.D.: *The Detection and Treatment of Cardiovascular Syphilis*, New England J. Med. 223:444 (September 19) 1940.

SALIVARY CALCULI

A Method of Removing Calculi From the Submaxillary Gland

Report of Two Cases

W. P. McKAY, M. D.

FAYETTEVILLE

Salivary calculi are formed of salts precipitated from the saliva. The nucleus of a calculus may be an epithelial cell, a clump of pus cells, or bacteria. Their composition—calcium and magnesium phosphate and calcium carbonate—is identical with the composition of tartar that forms on the teeth. They are more or less oblong in shape, and their surfaces are rarely smooth but usually uneven and jagged. A small calculus, no larger than a grain of sand, may cause symptoms when lodged in one of the small branches that go to form the main drainage duct, or when caught temporarily in the constricted outlet of the main duct where it emerges through the mucous membrane of the mouth. Calculi occur most frequently in middle aged males, rarely in children. The gland most frequently involved is the submaxillary; and, for no reason known or suspected, the right submaxillary is more frequently involved than the left. Next in frequency of involvement is the parotid gland. The sublingual gland is rarely involved.

A brief word as to the anatomy and position of the salivary glands and the density of their secretions may help to explain the order of their involvement. The parotid, the largest, weighs from half an ounce to an ounce. Stenson's duct, which drains it with the help of gravity, is about two and a half inches long. The saliva secreted by the parotid gland is less dense and less viscid than that secreted by the submaxillary. The submaxillary gland, about a third the size of the parotid, drains through Wharton's duct, which is about two inches long. This duct, passing forward and upward, opens by a narrow orifice on the summit of a papilla at the side of the frenum linguae. The lumen of this duct, about half that of Stenson's duct, with its narrow orifice emitting a dense viscid saliva traveling upward against gravity, probably explains the more

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frequent formation of calculi in the submaxillary gland. The sublingual gland, smallest of the three and about half the size of the submaxillary, is located just beneath the mucous membrane at the forward portion of the floor of the mouth. It drains through eight to twenty short ducts of Rivinus, most of which open through the elevated crest of the plica sublingualis, the remainder joining to form Bartholin's duct, which in turn joins the submaxillary or Wharton's duct, just before its exit. A calculus derived from the sublingual gland, passing through Bartholin's duct and lodging in the narrow common exit of Bartholin's and Wharton's ducts, might be ascribed to the submaxillary gland, thereby increasing erroneously the reputed incidence of calculi of submaxillary origin.

Calculi may form in the main ducts as well as in the glands. When they are of a size sufficient to interfere with drainage, symptoms occur. In the beginning the symptoms are vague and indefinite. There may be a sensation of fullness and swelling about the involved gland while the patient is eating. Often there is a sharp shooting or stinging pain that lasts but a moment and disappears. Pain while eating is the most frequent symptom, whether the obstruction is partial or complete. If it is complete, the pain is severe, being caused by tension from retained saliva which cannot pass through the obstructed duct. Severity of the pain is in proportion to the swelling. Occasionally a small calculus may cause no symptoms until it becomes lodged in exit through the narrow outlet of the duct, and scratches the patient's tongue. By pressing the gland gently and milking the duct, in a suspected case, a grayish mucoid material may be obtained. If there has been a recent attack of pain and swelling the material may be blood tinged. If infection has occurred flakes of pus are seen. The infecting organisms are usually streptococci, pneumococci, staphylococci, and occasionally spirochetes. Pain is more constant when there is infection. Abscess formation may result in rupture into the mouth or through the skin over the gland, with discharge of the calculus. If the abscess ruptures through the skin a permanent salivary fistula may result. (I saw one of these fistulas in a patient aged 72. He pre-

pared for a meal by wrapping a turkish towel around his neck. It was always soaked with saliva when he finished eating.)

Diagnosis

Diagnosis is usually made from the history. If the stone is in the duct and is of sufficient size, it may be felt by a finger inside the mouth. If it is located deep in the gland, detection by palpation usually is impossible. A piece of hard candy held in the mouth will often precipitate pain and swelling. The calculus may also be felt by a small probe passed into the duct. Roentgenograms should always be made, even when a stone has been felt by the finger; for there may be other stones present. Swelling from mucous cysts, thyroglossal or dermoid cysts is not easily mistaken for symptoms caused by calculi.

Treatment

Removal of a calculus that can be felt in the duct is a familiar and fairly easy procedure. If the concretion is in the gland the task is more difficult. If an external incision is made a salivary fistula may result, necessitating the removal of the gland. This is practicable in the case of the submaxillary, but results in a feeling of dry mouth. Removal of a calculus from the submaxillary gland through the mouth is practically impossible unless it is large enough to be easily palpated. Removal of the parotid gland is of course impracticable, because of the certain result of facial paralysis.

Within the last four years I have succeeded in removing a calculus from a submaxillary gland of each of two patients without internal or external incision into the glands. The textbooks I had at hand made no mention of the method employed. The method has probably been used, but, being honestly unaware of it, I felt that I had a legitimate excuse for presenting this paper. In one of the cases the calculus was small and the gland chronically abscessed. In the other the calculus was slightly larger, and no infection was present.

Report of Cases

Case 1. Miss M, aged 30, gave a history of pain and swelling about the right submaxillary gland region for about two years. The pain was more acute when sweets or pickles were taken into the mouth. The pain often extended down the neck to the right

shoulder. Swelling was always in evidence, but was more pronounced at times, extending downward into the neck.

Palpation failed to reveal evidence of a calculus in the duct, but heavy mucoid material containing pus was expressed from it. The gland was too sensitive for palpation. X-ray revealed a calculus in the right submaxillary gland. A Bowman's No. 1 tear duct probe passed into the duct failed to encounter the calculus. Eventual removal of the gland, suggested as a possible necessity, was not agreed to by the patient, who dreaded the scar. She volunteered complete cooperation in the employment of any other method than cutting. Thus began a long period of attempts to remove the calculus otherwise. An incision over the gland through the floor of the mouth (under general anesthesia) failed to reveal it, chiefly perhaps because the calculus was small and deep set, shown by roentgenogram to be below the lower border of the mandible. Weeks later dilatations of Wharton's duct were commenced. The stone could be felt by the probe about two and one-half inches from the mucous membrane orifice. Probes increasing in size were passed at intervals of three to ten days. Five day intervals furnished the best results. Once an interval of two weeks elapsed, necessitating a new beginning with a No. 1 probe. Each time a probe contacted the calculus an attempt was made to force the probe gently by it. This often succeeded, and the stone was finally dislodged and started on its way out. The outward progress through the duct, however, was slow, and often the calculus fell back into its original position. It was finally crushed by small alligator forceps, and the particles were washed out by saline introduced through a small cannula. The patient was well when seen two weeks later.

Before a probe was introduced, it was lubricated with 1-5000 bichloride of mercury ointment. Discomfort was controlled by instilling 1 or 2 cc. of 4 per cent butyn solution into the duct and waiting three minutes for anesthesia before proceeding. As the dilatations progressed pain gradually subsided, and before the stone was eventually removed the thick, pus-flaked material disappeared. The hard, sensitive mass in the submaxillary triangle had also practically disappeared.

Case 2. This case was similar to the first one, with the main exception that there was

no infection in the gland. The gland involved in this case was the left submaxillary, and the patient, a married woman, was 47 years of age. Removal of the calculus was accomplished in six and a half weeks, and the patient never seemed to mind the repeated procedure. The calculus in this case was removed through the wall of the duct, after it had been moved far enough forward to be palpated by the finger in the floor of the mouth.

A PRACTICAL PLAN FOR THE REDUCTION OF INFANT AND MATERNAL MORTALITY

C. D. BERRY, M. D., and
R. A. ALTER, M. D.

DURHAM.

The problem of obstetrical patients with vascular or renal derangement has been studied extensively. The notoriously high incidence of grave complications, both obstetrical and general, in this type of patient has led many internists and obstetricians to evaluate carefully not only their physiology during pregnancy, but also the advisability of further pregnancies. Most physicians at the present time, on the basis of experimental and clinical observations, feel that pregnancy superimposed on a diseased renal or vascular system is a definite added hazard to the maternal organism.

Realizing the inadequacies in the management of the hypertensive or nephritic pregnant woman, we have studied 4100 consecutive deliveries in order to obtain a group of such cases. The first series of 2000 consecutive deliveries was taken from a large obstetrical clinic employing in general the "home delivery" type of service. The second series was made up of consecutive ward deliveries in a hospital whose obstetrical patients comprise both those from its prenatal clinic and those referred from physicians in the locality—the latter generally for obstetrical complications.

Clinical or ward obstetrics provides a marked contrast to private obstetrics, not only in the type and severity of the abnormalities encountered, but also in the

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economic means for handling these abnormalities. An accurate diagnosis is usually available for the ward patient, but frequently the sociological and financial backgrounds prevent thorough rational therapy. The frequent economic inadequacy is enhanced by the general disinterest usually manifested by the ward obstetrical patient. In the so-called lower levels of society it is very difficult to obtain the patient's cooperation, not only in the field of therapeutics but, more important, in preventive medicine. Unless the disease process interferes with any of the major biologic functions, its treatment will be, despite cajolings and threats, often half-heartedly carried out by the patient.

Most women exhibit signs of permanent vascular or renal disease following repeated episodes of pre-eclampsia or eclampsia with their pregnancies. With this in mind we decided to group together for analysis patients in these series who had definite signs of permanent vascular or renal disease and patients who had been observed with two or more pre-eclamptic or eclamptic pregnancies. It must be emphasized that one previous episode of pre-eclampsia or eclampsia was not sufficient grounds for inclusion in the group. The diagnosis of hypertensive vascular disease was made only when the patient showed, both in the pregnant and non-pregnant state, a persistent hypertension (diastolic pressure above 95), with or without secondary cardiac or renal disorders. The usual diagnostic criteria—hypertension, albuminuria, alterations in the blood chemistry, etc.—during the last trimester of pregnancy and disappearing without residua following delivery, were employed when including a patient in the "repeat pre-eclampsia" group. The presence of convulsions in these cases, of course, changed the diagnosis to eclampsia. The difficulty in selecting correctly the so-called "nephritic" patient is obvious. However, if there was a previous history of kidney disease, and if albuminuria, azotemia, reduced renal function, hypertension, casts and red blood cells in the urinary sediment were found and persisted in the pregnant and non-pregnant condition, the diagnosis of acute or chronic glomerulonephritis or chronic pyelonephritis was made.

With these three groups of patients in mind—nephritic, hypertensive, and "repeat pre-eclamptic"—, we felt that a concept of

a "bad risk" patient had been developed. One hundred and eighty-five such patients in the hospital group and 109 in the maternity clinic group made a total of 294 "bad risk" cases in a series of 4100 unselected consecutive ward deliveries—a percentage of 7.10. The separate and combined statistics concerning these patients in the two series are analyzed in tables 1, 2, and 3.

It was thought worth while to include in this study the number of patients returning to the hospital for the six-weeks routine check-up, at which time, on many obstetrical services, contraceptive information is given, if necessary. Every patient has been asked to return for this examination. It was also thought wise to record the number of premature babies and stillbirths. The month of gestation in which the patient was first seen by the hospital or clinic was included. This last information is of interest when hysterotomy is considered. Many obstetricians feel that the problem of early and relatively late interruption has, not only maternal and fetal, but also sociological significance.

It must be emphasized that the group of "bad risk" patients represents individuals in whom pregnancies should be and can be prevented. Although small in number, the "bad risk" group provides a large proportion of the serious maternal and infant complications. With this group eliminated, it is felt that there would be marked improvement in the maternal and fetal mortality and morbidity rates.

That this type of individual is not necessarily of the colored race can be seen by the fact that 40 per cent of the hospital group were white. The average age of 31 reveals that most of these patients can look forward to at least ten years of childbearing activity. While these patients in general are fertile, they have lost on an average of two children. Induction of labor has been necessary in a large proportion of these patients. This is one of the factors certainly accounting for the high incidence of morbidity. The necessity for hysterotomy, with its attendant complications, is apparent. Unfortunately most of these patients fail to visit a doctor until relatively late in their pregnancies. The seventh month of gestation was the average time that these patients were first seen by the hospital, although some of them had visited physicians earlier. Termination of pregnancy, which is so frequently manda-

TABLE I
Hospital Series—2100 Cases

Total number of "bad risk" patients	185
Average age of patients	32
White	75
Colored	110
Hypertensive vascular disease	131
Repeated episodes of pre-eclampsia or eclampsia	27
Acute or chronic glomerulonephritis or chronic pyelonephritis	27
Number of patients returning for postpartum examination	62
Average month of gestation when first seen at hospital	7
Average number of previous pregnancies	5
Average number of living children	3
Number of patients receiving previous contraceptive advice	21

Obstetrical complications:	Series	"Bad risk" group	Percentage of cases in "bad risk" group
Hemorrhage (antepartum and postpartum)	70	20	28.5
Morbidity (usual criteria—uncorrected)	380	47	12.4
Premature infants (weight below 2500 Gm.)	337	98	27.4
Maternal deaths	43	25	58.1
Stillbirths	137	62	45.3
Late and full term hysterotomies performed (not necessarily for vasculorenal complications alone)	47	28	59.0
Surgical induction deemed necessary (rupture membranes, etc.)	177	36	20.3
Medical induction deemed necessary (including pituitary extracts)	165	21	12.4

tory in this group, is much less hazardous in the first than in the last trimester. Prematurity is the greatest danger to the infant. Recalling that the "bad risk" group makes up only 7.1 per cent of the 4100, one is struck by the contributions made to the maternal and infant complications by this vasculorenal group.

After consideration of the figures it was felt that permanent elimination of this "bad risk" group from the possibility of child-bearing was highly desirable. About 10 per cent of the mothers die; about 40 per cent have premature babies; and about 30 per cent have stillborn children. The death of the mother increases child delinquency and many times throws insurmountable difficulties on the father. Furthermore, the economic burden of repeated hospitalization for these mothers and their premature children was felt excessive.

A method of eliminating pregnancies in these persons was next considered. Recently one of us (Berry) has studied the effectiveness of a relatively well thought of contraceptive technique in this type of patient, compared with a similar number of patients receiving no preventive advice⁽¹⁾. There was a 50 per cent failure in both groups of individuals. Failure in this type of patient

TABLE 2
Clinic Series—2000 Cases

Total number of "bad risk" patients	109
Average age of patients	32
Hypertensive vascular disease	86
Repeated episodes of pre-eclampsia or eclampsia	22
Average number of previous pregnancies	5
Average number of living children	3.8

Obstetrical complications:	Series	"Bad risk" group	Percentage of cases in "bad risk" group
Hemorrhage (antepartum and postpartum)	47	12	25
Premature infants	46	24	52
Maternal deaths	9	3	33
Late and full term hysterotomies performed (not necessarily for vasculorenal complications alone)	24	8	33
Stillbirths	92	18	19
Surgical induction of labor	40	23	57

TABLE 3
Both Series—4100 Cases

Total cases of:	Series	"Bad risk" groups	Percentage of cases in "bad risk" groups
Hemorrhage	117	32	27
Prematurity	403	122	30
Maternal deaths	59	28	47
Stillbirths	229	80	35
Late or full term hysterotomies	71	36	50
Surgical induction	217	59	27

was extremely grave. The irresponsible attitude of patients in this group made any contraceptive measure risky. Consideration has thus led the observers to the inescapable conclusion that only surgical sterilization was feasible, practicable and economically possible.

Early hysterotomy plus sterilization is the procedure of choice. Later in the pregnancy, when most of the patients are seen, other means must be used.

Of the "bad risk" patients who are referred back to the clinic in six weeks for postpartum examination, contraceptive advice or sterilization, only 30 per cent return. Because of the justified trend of obstetricians away from "section for sterilization", a substitute was sought. Immediate postpartum sterilization is easy, safe, effective, and economical. A review of the recent literature⁽²⁾ reveals no mortality and very low morbidity in different series of these postpartum sterilizations. The easiest, safest, and most economical time for this operation to be performed is within the first twenty-four hours after delivery. The complications are fewer and the postpartum and postoperative courses run concurrently.

- (a) Adair and Brown: Puerperal Sterilization, *Am. J. Ob. & Gyn.* 37:472 (March) 1939.
- (b) Hewitt and Whitley: Postpartum Sterilization, *Am. J. Ob. & Gyn.* 39:649 (April) 1940.
- (c) Pfuetze, R. E.: Postpartum Sterilization, *Am. J. Ob. & Gyn.* 41:331 (February) 1941.

1. Berry, C. D.: Value of Contraception in Clinic Patient, *Am. J. Ob. & Gyn.* 41:1072 (June) 1941.

Since in all types of sterilization operations failures exist, it is our opinion that the simplest procedure is the one of choice. The Pomeroy technique is very satisfactory. Ligation of a "knuckle" of tube with an absorbable suture through a one and one half inch midline incision under local anesthesia is all that is required. We feel that the saving in operative manipulation, blood loss, and time which this procedure affords far outweighs the questionable increase in "sterilization failures" it may carry. The patient can be out of the hospital in nine to ten days.

The medicolegal feature does not provide any difficulty. Most of these patients do not want more babies, and the law does not forbid sterilization when medical indications exist, providing signed permission of the husband and wife is obtained.

Summary and Conclusions

The source of many obstetrical and pediatric complications is identified and analyzed.

A plan of early hysterotomy and sterilization, or immediate postpartum sterilization, is proposed for the elimination of this source.

The plan appears to be easy, safe, economical and necessary, but does not pretend to be the only solution of the problem of removing these bad risk patients from the maternal statistics. In our hands the method has not been attended with any mortality or serious complications. We feel that the plan proposed does provide a means of attaining improved infant and maternal care.

Abstract of Discussion

Dr. George M. Cooper (Assistant State Health Officer): In my judgment the work Dr. Berry and Dr. Alter have done in this experiment is the most thorough piece of medical work I have seen in this state for several years. Their plan is sound, practical, and simple.

Dr. R. A. Ross (Durham): There are several points in Dr. Berry's paper that I think will bear emphasis. He made a very critical analysis of the material, and his conclusions are sound. I think the thing that appeals to most of us who have to deal with the lower class of patients is that the problem of sterilization should be settled before the patient is dismissed. You never know whether you are going to get them back again.

In a recent analysis of between two and three thousand postpartum sterilizations, we found less than 1.10 per cent mortality.

Drs. Berry and Alter minimized the medicolegal problem.

The Charlotte clinic has found that in all probability surgical sterilization is the best procedure. If a diagnosis of cardiovascular-renal disease is definitely established, the operation should be performed. Another pregnancy would take ten years off the life of the patient, and she is far more important as a mother than she is occupying a place in a graveyard.

Dr. A. W. Makepeace (Chapel Hill): I wish Dr. Berry and Dr. Alter had emphasized the preventive aspect a little more. I should not like to wait until a patient had had two or three attacks of eclampsia or three or four babies with hypertensive disease before suggesting sterilization. Dr. Ross emphasized the fact that each pregnancy took five or ten or fifteen years off the life of such a patient. Under those circumstances, I think it is better if you sterilize the patient early, and not wait until you hasten her death.

Dr. W. P. Richardson (Chapel Hill): My work and interest have been largely in the field of contraception, and in the analysis and discussion of our contraceptive program presented last year I pointed out that these conditions which should preclude any further pregnancies did not call for contraception, but for sterilization. I enjoyed this excellent presentation, and especially appreciated the fact that it presented a program that could be carried out while the patient is in hand. It is certainly true that if you let them get away from you, the next time you hear from them, they are pregnant again.

Dr. Alter: In closing the discussion, I would like to re-emphasize what we think is the primary significance of these figures, and that is a recognition of the source of maternal and fetal mortality and morbidity. We think that with these figures we have been able to point out where a large proportion of morbidity and mortality is arising. In the treatment of any type of disease, the first thing you have to do is to find out where the disease is. The question of handling these patients after we have labeled them is something that goes, I think, a little bit beyond the scope of this paper. Whether immediate postpartum sterilization, contraception, or sterilization of the husband is the answer, we are not in position now to say. We do feel that postpartum sterilization should have consideration by all of us and further investigation.

The Development of Organic Disease—The gradual onset of disabilities, bodily and mental, in the later years of life demands long-range studies on the possible influence of inheritance, early injuries, severe infections in childhood and youth, frustrated plans, the demands of labor and probably many other conditioning experiences. Because we each become more and more individualized as we grow older, the kind of study which is required must be correspondingly individual. Only after the collection of a vast amount of information will any reliable summary be possible.

It may be that the "general practitioner," if properly trained, would be in a more favorable position than any other type of physician to secure information useful in tracing the course of slowly developing organic disease. He would be especially well placed to obtain that information if there should be an awakening of both the public and the medical profession to the supreme value of positive, vigorous health.—Walter B. Cannon: *Problems Confronting Medical Investigators*, Science, 94:175 (August 22) 1941.

TREATMENT OF INFECTIONS OF THE RESPIRATORY TRACT WITH SULFONAMIDES

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and

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Infections of the respiratory tract, roughly grouped for lack of more precise etiological knowledge under the designations of coryza or influenza, constitute today the greatest unconquered menace to health and economic efficiency. It is generally accepted that such infections are due to viruses, and that, if uncomplicated by pyogenic organisms, they would not be serious in their consequences, lasting only a few days. It is these organisms which are responsible for the long list of untoward sequelae, and if their growth could be controlled, we should be successful in mitigating the severity of respiratory infections in general.

The sulfonamide drugs are known inhibitors of the growth and multiplication of many secondary invaders of the respiratory tract, and it is logical to use them in such infections. Following this reasoning 111 male students of Duke University with influenza were treated with sulfonamide drugs during the influenza epidemic of January and February, 1941. One hundred and sixteen milder cases were given the usual symptomatic treatment. The present report merely records certain observations, without attempting to draw statistical conclusions.

The average age of the students was 20.2 years. The diagnosis of influenza was based on the history and physical examination. The usual history obtained was that of a sudden onset of a chilly feeling accompanied by generalized headache, backache, myalgia, general malaise and anorexia. Within a few hours the chilly sensation disappeared and was replaced by a feverish feeling. About one-fifth of the students gave a history differing from the above in that the onset had been preceded by coryza for from two to five days, and in these cases the initial symptoms had not appeared so abruptly. The majority of the students reported to the Student Health Department within twenty-four

hours after the beginning of their symptoms. The temperatures ranged from normal to 41 C. (105.8 F.), with corresponding pulse rates. The physical signs, however, were scanty, consisting merely of inflamed edematous nasal turbinates and injected pharyngeal walls.

Leukocyte counts were done on 27 per cent, and these ranged from 4,000 to 9,000, with the great majority being nearer the lower level. Nose and throat cultures revealed the usual organisms: hemolytic and non-hemolytic *Staphylococcus aureus*, alpha hemolytic streptococci, *Micrococcus catarrhalis* and *Pharyngis siccus*. Only 4 patients showed beta hemolytic streptococci, and in none of these cases was this the predominating organism. Routine urine examination was done on all cases and was negative, except for a trace of albumin, which was present in 94 per cent.

One hundred and six of the milder essentially afebrile cases were sent back to their dormitory rooms and kept in bed under close supervision. They were given nothing but aspirin and codeine every four hours, ephedrine nose drops, and salt, soda and borax gargles. One hundred and twenty-one cases were admitted to the hospital on the Student Health Service. Ten of these were treated in the same fashion as those sent to the dormitories and 111 received sulfathiazole, 2 Gm. immediately, and 1 Gm. every four hours until the temperature had been normal for twelve hours. In several instances larger doses were given. In six cases the staff did not feel that the response to sulfathiazole was satisfactory, and in these sulfapyridine was substituted.

Results

In the 111 cases of influenza treated with sulfonamides, the average duration of fever from the time of admission was 1.6 days, the longest five days, the shortest twelve hours. The average total dose of sulfathiazole was 13.5 Gm.: the smallest amount given was 5 Gm. and the largest 32 Gm. Blood concentrations ranged from a trace to 8 mg. per 100 cc., with an average of 3.2 mg. per 100 cc. The average stay in the hospital for this group was 3.4 days.

In the 10 patients admitted to the hospital with influenza and treated entirely symptomatically, the duration of fever was 3.1 days, the longest nine days, the shortest

two days. The average hospital stay was five days.

It is not possible to give any very accurate data concerning the 106 patients who were diagnosed as having influenza, but who were not admitted. Judging by the rather uncertain information obtained on visits to and by the Student Health Department, the average case was not symptom-free for six days.

Toxic Reactions Due to Sulfonamides in Uncomplicated Influenza

Thirty-four per cent of the 111 patients treated with sulfathiazole complained of nausea and a sensation of "drunkenness". Only two patients, however, had severe enough symptoms to warrant stopping the drug.

One patient complained of pain in the region of the right kidney after receiving 15 Gm. of sulfathiazole; the drug was stopped and the pain disappeared forty-eight hours later. Repeated urine examinations revealed only an occasional white blood cell, and at no time were casts, red blood cells or a positive benzidine reaction in evidence. X-rays of the abdomen failed to show any renal calculi.

No patients in this group developed leukopenia, hemolytic anemia, skin rash, drug fever or erythema nodosum.

Complications in Patients Not Receiving Sulfonamides Immediately

Two students delayed reporting to the Student Health Department because they were in the midst of examinations. One came in three days after the onset of symptoms, the other four days after. They had had no treatment of any sort. Both had a fever of about 40 C. (104 F.) and signs of pulmonary consolidation; x-rays showed a patchy bronchopneumonia. One had beta hemolytic streptococci as the predominating organism in his sputum; the other showed no particular organism. Both responded quickly and satisfactorily to sulfathiazole and were discharged in seven and eight days respectively.

A 19 year old male had been followed as an out-patient for two days on symptomatic therapy. He then failed to return for two days. On the fifth day he reported with a fever of 39.5 C. (103.1 F.) and was admitted. On the following day there were fine moist rales at the left base and his white blood

cell count had risen from 6,100 to 16,500, with 84 per cent polymorphonuclears and a moderate shift to the left. Sputum culture showed alpha hemolytic streptococci. He was started immediately on sulfathiazole and received 68 Gm. during the next ten days. At this time he developed erythematous tender nodules over his extremities and the drug was discontinued, the temperature then falling promptly to normal. During the last seven days of his febrile reaction his pulse rate curve was considerably below his temperature curve. It is quite possible that this fever may have represented a toxic response to the drug rather than a continued pneumonia; however, his white cell count remained elevated and the x-rays and physical signs showed little change during the entire febrile period.

An 18 year old male was ill for two days before reporting to the Student Health Service. Physical examination was essentially negative at this time. He was admitted and treated symptomatically, but on the fifth hospital day his temperature rose to 39.4 C. (103 F.) and his white cell count rose from 7,000 to 20,800, with 78 per cent polymorphonuclears and a shift to the left. X-ray showed bronchopneumonia in the right middle lobe. A pure culture of hemolytic staphylococcus aureus was grown from his sputum. He was started on sulfathiazole and received 86 Gm. in the next fifteen days. The pneumonic process cleared from the right middle lobe but spread to both lower lobes, and despite repeated sterile blood cultures, he developed a right otitis media. The ear was incised and Staphylococcus aureus was cultured from it. In view of his rather poor response to sulfathiazole, sulfapyridine was used for five days. He received 34 Gm. of this without appreciable clinical change. He also received 140,000 units of staphylococcus antitoxin. After a total dose of 120 Gm. of the sulfonamides, he developed erythema nodosum. The drug was stopped, his temperature began to fall, and within three days was normal. During the latter part of the febrile response the pulse rate curve was considerably lower than the temperature curve, and this may well represent a prolonged febrile response due to drug toxicity.

Complications in Cases Receiving Sulfonamides Immediately

There was only one instance of this. An 18 year old male was admitted to the hos-

pital suffering from influenza, with a fever of 40 C. (104 F.). He was given sulfathiazole, and received a total of 11 Gm. in two days. His temperature was normal after thirty-six hours and he was discharged on the fourth day. Six days later he developed pain in his right chest while he was at his home, where he had gone following completion of his academic examinations. Eight days from the time of his discharge he was returned to the hospital. He was acutely ill with pneumonia, the entire right lung being consolidated. The white blood cell count was 28,650, with 93 per cent polymorphonuclears and a marked shift to the left. Sputum cultures revealed a pure growth of beta hemolytic streptococci. Thirty-eight grams of sodium sulfapyridine were given during the first six days, with only slight improvement, even though the streptococcus disappeared from the sputum. He remained febrile and developed signs of pleural fluid. Thoracentesis was done at weekly intervals on five occasions, and a total of 3,300 cc. of purulent fluid was removed. Cultures of this fluid were always sterile. After the fifth tap, no more fluid formed and he made a slow but uneventful recovery.

This patient was entirely too active, taking examinations, and traveling home immediately after discharge from his initial admission, on his own initiative and against advice. It is possible that the complicating pneumonia and empyema could have been prevented by a longer convalescent period. However, he did develop a complete lobar consolidation nine days after having received 11 Gm. of sulfathiazole.

Summary and Conclusions

Two hundred and twenty-seven instances of influenza were observed among male college students. One hundred and sixteen were treated symptomatically. One hundred and eleven received sulfonamides, with an average total dose of 13.5 Gm. No serious drug reactions were encountered in this group.

The average duration of fever in the sulfonamide treated group was one-half that of the untreated group, and the period of convalescence was appreciably shortened.

One sulfonamide treated case developed pneumonia eight days after receiving the drug; two symptomatically treated cases de-

veloped pneumonia; and two completely untreated cases developed pneumonia.

No attempt is made to draw dogmatic conclusions from such a small series of patients, but the results of sulfonamide treatment were deemed encouraging and well worth further study.

The Art of the Practice of Medicine.—The difference between the science and the art of medicine is perhaps most clearly shown in the management of the patient with heart disease. Whereas one man may recognize organic heart disease and relegate his patient to invalidism and a mental state of constant fear of impending disaster, another physician, in the management of a similar condition, may be able to instill in his patient a philosophy of moderation and an opportunity to lead a happy and useful life although he is physically handicapped.

Bishop and Bennett in a recent issue of *Hygeia* state, "The outlook for longevity in heart disease is not at all gloomy when viewed from the range of cases followed over the years in a private practice in cardiology. . . . A happy life of three score years and ten—and then some—can be attained if the days of such cardiac 'risks' are marked by moderation."

As one looks back through the years it is with considerable chagrin that one recalls the bad prognosis given in a case of rheumatic heart disease or of hypertension, and today confronts those patients on the street, enjoying useful lives and affording happiness to everyone about them. Physical signs are not infallible; judgment is difficult.

As physicians we are too prone to lose sight of the fact that we are treating human beings, with minds and emotions, and not mere organisms with hearts and lungs and kidneys. To provide rest and digitalis is not enough; we must offer hope and project to the patient a way of living that is in keeping not only with his physical handicap, but one that is conducive to tranquility of mind and to the usefulness of life.

The recording of the blood pressure does not help the patient with hypertension. Hypertension does not preclude longevity. Fear and excess jeopardize the life of the patient with an elevated pressure; serenity and moderation give promise of continued usefulness and happiness. The successful management of the ill patient demands something more than the treatment of his pathologic state. The art of medicine is the treatment of the individual as a whole.—Editorial, *J. Iowa State M. Soc.* 31:496 (October) 1941.

Dosage in Iron Therapy.—It is of greater concern in iron therapy that adequately large doses of inorganic iron be given than that any particular form or combination be used. The more soluble iron compounds have come into favor because the effective dose is smaller. The necessity of giving infants and children relatively larger dosage per kilo has been emphasized by Meulengracht, who incidentally was one of the first to point out the fallacy, so prevalent in the first quarter of our century, of treating low hemoglobin anemia with small, supposedly stimulating doses of iron, frequently in the form of ineffective organic combinations.—Philip F. Eckman, M.D.: Indications for Use of Iron in Treatment of the Anemias, *Minnesota Medicine*, 23: 714 (October) 1940.

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MEDICINE AND THE CHANGING ORDER

The National Physicians' Committee has just issued a condensed report of its two years' activities. This report so vitally concerns all practicing physicians that it is reproduced in part for the benefit of the readers of the NORTH CAROLINA MEDICAL JOURNAL.

On October 14, 1939—two years ago—the first letters and literature were mailed to physicians from the offices of N. P. C. Three well-defined tasks were undertaken:

1. Clarifying the basic issues to a point of understanding for and within the profession;
2. Promoting the extension of the distribution of high quality medical care;
3. Educating the public to a point of understanding on the basic meaning of and the effective results from our system of independent medical practice.

The establishment of N. P. C., supplementing the efforts of existing medical organizations, stimulated medical journals in almost every state to the publication of articles and editorial comment on or in connection with the importance and effective-

ness of our system of distribution of medical service.

As a new agency it aided in creating widespread discussion of this vital issue within county and state medical society groups. These discussions led to a clarification and understanding of the issue and toward unifying the profession. They stimulated local medical societies to undertake the providing of medical care on a co-operative or a prepayment basis. More than two hundred of these plans have been undertaken; two of them, the California Medical Service and the Michigan Medical Service, on the basis of state wide operation under medical association sponsorship.

These efforts have been vitally important. They have provided medical care for many thousands of people in lower income groups. More important, they have provided conclusive evidence of the fact that the medical profession has been and is fully aware of and alive to its grave and exclusive responsibility; namely, the providing of the highest possible medical care to all the people at the lowest possible cost. Further, and of even greater value, the experimental efforts have demonstrated that there is no panacea for the problem of medical care. The two vital factors remain,—the Doctor and the Patient.

Educational Efforts

Approximately one million letters were mailed; a series of booklets and reports were issued and distributed to a total of approximately two and one-half million copies. These included The Achilles Heel of American Medicine; the Minutemen of American Medicine; The Priceless Heritage; Statement of Post-election Position, Program and Policy; The Two Essentials for American Medicine; and New Conditions Demand New Techniques.

Two two-page advertisements in color were published in the *Saturday Evening Post*. Full page advertisements were published in nearly one hundred daily newspapers, under local medical society sponsorship.

These efforts were all concentrated on carrying through to the general public an understanding of the outstanding fundamental achievements of American Medicine, such as "The Highest Level of Health Ever Known," and the basic causes of the unusual achievements.

Evidences of the effectiveness of joint

efforts toward a common objective are being provided.

In a public address constituting a declaration on Health and Medical Policy, at Bethesda, Maryland, on October 31, 1940, Mr. Roosevelt said, in part:

"In American life the family doctor, the general practitioner, performs a service which we rely upon and trust.

"No one has a greater appreciation than I of the skill and self-sacrifice of the medical profession. And there can be no substitute for the *personal relationship between doctor and patient* which is a characteristic and a source of strength of medical practice in our land."

On July 18, 1941, Mr. Arthur J. Altmeyer, Chairman of the Social Security Board, before the House Committee investigating National Defense Migration, in part, said:

"Some sharp clashes have centered around the proposals for health insurance. There are those who say that such proposals lead inevitably to 'socialized medicine,' a vague phrase. 'Socialized Medicine' is something to which I am opposed if that phrase means a system which destroys the *personal relationship between the patient and his doctor.*"

Is The Danger Past?

On September 24, Mr. Charles A. Togut, speaking before the National Fraternal Congress of America, warned that "state or governmental medicine will paralyze the country's fifty million voters and destroy the private practice of medicine. He said:

"National Defense has catapulted the issue of the 'Nation's Health' onto the front page of every newspaper and onto the burning wires of every radio transmitter. As in nations ruled by the sword, malicious propagandists are piercing the heart of our incomparable system of medical care.

"The Congress of the United States is weighing the destiny of our peoples and of our doctors with numerous authoritarian legislative medical measures. The battle of the century, the government versus the American Medical Association, is but a prelude to the conditioning processes of a National Planned Medi-

cal Care Program, unless the American peoples, the doctors, the industrialists, the leaders of labor and capital can smother the most powerful propaganda factory in the world and inaugurate fighting means and methods to unite the leaders of medicine and industry in a progressive Health Insurance Movement."

Today, there is greater cause for fear and a greater need for constant and intelligent vigilance than at any previous time if the independence of medicine is to be preserved.

The New Responsibility

Now, there is the opportunity and the responsibility for medicine to take the lead in acknowledging the present need, cheerfully assuming its share of the immediate task—on the basis of the emergency—but, at the same time, building the safeguards which will insure ultimately a continuation of the American Way of Life and, incidentally, the independence of the medical profession.

The Proven Method

There is but one way. Its potency has been demonstrated by American physicians—*Educational Propaganda.*

The methods and the preliminary educational efforts of the physicians have been unusually—in some respects spectacularly—effective. The methods and the media can be indicated. It is as impossible to explain the "why" of the effectiveness as it is to explain the spiritual factors which enter into the curing of disease. The elements are as subtle as those of the "doctor and patient relationship."

There can be no question but that, if 150,000 physicians fully understood the N. P. C. purpose and fully comprehended the nature and subtlety of its operation, each and every one would desire to participate in its efforts.

For almost a year—every week for more than forty weeks—there has gone forward from the office of N. P. C. an editorial to more than 12,000 newspapers with an estimated 40 million readers weekly. They are short, concise and timely. Each and every editorial has a short concluding paragraph exclusively devoted to an explanation and praise of our system of independent medical practice.

It is obvious that these editorials must be published to become factors in spreading

medical information. Thousands of newspapers—newspapers in every state—have published and are publishing this important material. (To any physician will be sent on request the newspapers in any state which are using the N. P. C. editorials.)

Finances

The policy of the National Physicians' Committee has been to carry forward effectively segments or parts of a broad program. The extent of its activities has been determined by funds available for operation.

To carry forward all phases of a carefully conceived and well defined plan of nationwide effort will require substantial funds yearly, and for a minimum period of three years.

It is now fully understood that the carrying on of this vitally important work is the direct responsibility of the medical profession.

During the past two years, individual physicians contributed to the N. P. C. efforts to the extent of approximately \$100,000. Individual local medical societies have made systematic canvasses of the membership of their societies respectively, and have provided financial support in amounts ranging from \$500 to, in one instance, more than \$3,000. 42.2 per cent of N. P. C. funds have come from sources other than physicians.

It has been demonstrated that:

- a. The hit-or-miss method is too slow—is wasteful—and may jeopardize final results through inadequate funds.
- b. This method places the responsibility solely on the shoulders of an enthusiastic minority.
- c. Systematized action by an official committee of the local medical society will:
 1. Produce adequate funds,
 2. Spread the load uniformly,
 3. Provide not only financial support but the interest and co-operation of the rank and file of physicians.

Your understanding, your interest and your support are needed and solicited.

THE BENZIDINE TEST IN THE DIAGNOSIS OF EARLY CANCER OF THE GASTRO-INTESTINAL TRACT

The belief among physicians that so-called "instruments of precision" yield evidence that is always precise frequently leads to gross diagnostic errors. The more complicated the instrument the greater is the faith inspired, so that one hears of "diagnoses" being made from the reading of electrocardiograms, or from single tests of the basal metabolic rate, or from x-ray plates. Such credulity is based upon ignorance or laziness, or both.

Excellent information may be furnished by "instruments of precision", but such evidence is only a part of the jig-saw picture, and must fit into its proper place in the clinical diagnosis easily and perfectly. A correct diagnosis fits the facts like a glove. Negative evidence must never be accepted as positive evidence; negative means nothing!

The above reflections have been inspired by a contemplation of the present state of diagnosis of cancer of the gastro-intestinal tract, one of the commonest problems facing the diagnostician, and one that is seldom solved quickly enough to save the patient's life. Forty thousand people die yearly in this country from cancer of the stomach. How many are saved by early diagnosis and prompt operation? This lamentable state of affairs is due in large part to a childish faith in "gastro-intestinal series", and to *too little faith in the patient's history and to ignoring the presence of occult blood in the stools.* The earmark of cancer is blood. Cancers bleed early, and the unequivocal presence of blood in stools, as evidenced by several properly controlled benzidine tests, *should always mean cancer until it is proved otherwise.* In the early diagnosis of cancer of the gastro-intestinal tract the benzidine test is of far greater value than x-ray studies. Both should be used, but positive blood with negative x-ray studies is compatible with early and operable cancer, whereas positive x-ray evidence of cancer all too often means a hopeless prognosis.

The benzidine test is easy to perform. E. R. Squibb and Sons manufacture a tablet,

devised by Roberts, containing benzidine and sodium perborate, which when moistened by the fluid to be tested and then touched with a drop of acetic acid yields a characteristic blue color if blood is present. Here is a cheap and easy test which, properly interpreted, is of greater value than x-rays in the diagnosis of early cancer of the gastro-intestinal tract.

* * * *

PATERNALISM WITH A VENGEANCE

On October 27, after a trial that lasted twenty weeks, a jury of Kentucky farmers decided that the leading tobacco companies of the country were guilty of a criminal combination in restraint of trade. Individual officials of the companies were also found guilty. The maximum penalty allowed by the law permits each company to be fined \$5,000 and each individual to be imprisoned a year for each count. This verdict is surprising in view of the fierce competition that has existed for many years between the rival tobacco manufacturers of the country. The case, of course, will be appealed, and it is expected to go to the Supreme Court of the United States; but with seven of the nine members of this court hand-picked by the present administration, it is doubtful that this travesty on justice will be overruled.

The so-called Department of Justice of our government insisted that this case, like that of the American Medical Association, be tried as a criminal rather than a civil action, and that it be held in Kentucky, where public sentiment against the tobacco buyers is strongest, and where it is to the interest of the farmers to get the highest prices possible for their tobacco, regardless of the future of tobacco manufacture as a whole. It is hard, if not impossible, to believe that such a verdict could have been obtained in North Carolina. Virtually every independent tobacco buyer and every farmer consulted over a period of years has expressed satisfaction with the prices brought by good tobacco. Furthermore, those who know personally or by reputation such men as James Gray, Clay Williams, Will Reynolds, Jack Glenn, and Ed Darr—all North Carolina citizens—*know* that none of them would stoop

to any mean or dishonorable action, still less to a criminal offense.

The trial is a logical sequel to the trial of the American Medical Association, in the program of the present administration. The lawyers for the government used the same technique—that of leading the jury to believe that the government was fighting for the oppressed and down-trodden against the tyranny of the arrogant aristocrats who conspired against them. It has been increasingly obvious that the policy of the present federal government is to exercise more and more control over industry and business as well as over the professions. The real purpose of making this a criminal trial, as David Lawrence has pointed out, “is to brow-beat American business into a new form of fascistic control whereby the Department of Justice will hereafter dictate how businesses shall be conducted. For now that an important suit has been won on the criminal side, Mr. Arnold can go forward with his scheme of official blackmail whereby American businessmen are threatened with criminal suits under the Sherman anti-trust law unless they agree in advance to consent decrees that go beyond the law itself.”

It is quite clear that the present Democratic party has become the National Socialist Party of the United States. Our national leaders in Washington may be sincere in adopting the Robin Hood complex that it is their duty to rob the rich to give to the poor; but in attacking the great industries of our country, with their millions of shareholders among the widows, orphans, and small wage-earners, they are causing a score of needy individuals to suffer for every wealthy individual reached.

The evil harvest of the nine years' warfare upon industry and business is being reaped in the numerous strikes that have been crippling our defense program, culminating in the open defiance of the government by John L. Lewis. Lewis's “donation” to the Democratic campaign of a half million dollars earned by the sweat of his serfs made it embarrassing for the administration to call his arrogant bluff.

Truly, we are witnessing paternalism with a vengeance; the sort of paternalism that makes no secret of favoring one child or group of children at the expense of the other offspring.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

DUKE HOSPITAL

O. C. HANSEN-PRUSS, M. D., and
IVAN W. BROWN, JR., M. D.

DR. O. C. HANSEN-PRUSS (reading the clinical summary):

The patient, a 14 year old colored male, entered the hospital complaining of joint pains and difficulty in walking for two years.

Family History: Mother died of a "stroke". Her age was unknown. All siblings were living and well. There was no known familial disease.

Past History: The patient's general health had always been fair to good. At the age of 18 months he fractured the left thigh: the leg was placed in a cast and the patient recovered in a few weeks without any residual trouble. His appetite had been good until a year ago. The system review was entirely negative. The patient came from a Negro family in poor circumstances, and his diet had been inadequate in such foods as milk and protein.

Present Illness: Two years before death this boy began to complain of a dull aching pain in the knees, beginning in the left knee and later affecting the right. The pains disappeared after a short time, but the affected joints began to show a gradual deformity and the patient walked with a limp. The deformity was in the nature of a bilateral internal rotation of the knees. It gradually became more marked and walking more difficult. Two months before death similar pains were experienced in the left ankle, left elbow, and left wrist. These pains again were transitory and were unaccompanied by any swelling or redness. It was not known whether he had fever at any time. During the last year of his life he failed to gain in weight and perhaps actually lost some weight.

Physical Examination: The temperature was 99.4 F., pulse 120, respirations 20, blood pressure 130 systolic, 90 diastolic. The patient was described as a poorly developed, poorly nourished colored boy in no distress, lying comfortably in bed. The peripheral lymph nodes were not enlarged. Examination of the eyes, ears, nose, and throat

showed nothing of significance. The lungs were clear to percussion and auscultation; the heart was normal in size, the rate 120 per minute. A soft systolic murmur was heard at the apex. There was no engorgement of the superficial vessels. Examination of the abdomen showed nothing abnormal. Skeletal examination showed a marked bilateral genu valgum with pronation of the feet. In walking the patient tended to sway from side to side. The upper extremities showed a slight deformity of the left wrist of the silver fork variety.

Accessory Clinical Findings: The hemoglobin was 42 per cent; there were 2,340,000 red blood cells, 6,800 white blood cells. The sedimentation rate was 30 mm. in 30 minutes. The urine examination showed a specific gravity of 1.008, no sugar, a trace of albumin, no sediment. Blood chemistry showed 10.9 mg. of calcium per 100 cc., 8.8 mg. of phosphorus per 100 cc., and 19.5 Bodansky units of phosphatase.

X-Ray Studies (Dr. George Baylin): The chest film showed the lungs to be clear and the heart normal. There was slight clubbing at the costochondral junctions. Films of the knees showed pronounced valgum deformities. The long bones were decalcified so that there was an accentuation of the trabeculae. The metaphyseal plates were extremely irregular, indicating severe disturbance in bone growth. These bone changes were typical of rickets.

Course in the Hospital: The patient was admitted to another hospital for a supracondylar osteotomy to correct the deformity of the knees. On the day of the scheduled operation the surgeon noted that the child was markedly anemic and appeared to be a poor operative risk, so the operation was postponed. Three days later the patient complained of a sudden severe pain in the abdomen, not localized. On examination the abdomen was found to be generally tender. The pain and tenderness were transitory and disappeared after a few hours. The next morning the child complained of feeling ill and refused his breakfast. Later in the morning he lapsed into coma and died at 1 p. m. on the fourth hospital day "quite unexpectedly". During the four days in the hospital his temperature ranged between 99.4 and 96 F. (by mouth).

Discussion

DR. HANSEN-PRUSS: The available data

are obviously meagre, yet certain facts stand out:

1. The age at which the disease process had its onset, namely in late infancy.
2. The chronicity of the illness.
3. The relatively rapid development of striking skeletal deformities, and their apparent symmetry.
4. The severe normochromic anemia.
5. The hypertension.
6. The high blood phosphorus in the presence of a normal value for calcium, and the large amount of phosphatase in the circulating blood.

The clinician often is forced to rely on one abnormal finding in a search for a corner stone for his diagnostic structure. In this case I believe that the primary lead is provided by the abnormally high blood phosphorus. This immediately suggests serious impairment of kidney function. An analysis of this patient's history fails to reveal any signs of a previously existing kidney disease. However, renal damage resulting from infections of the kidneys often is relatively quiescent in young children⁽¹⁾. I would suggest therefore that this boy had had pyelonephritis in the past. The presence of renal disease is suggested by the hypertension in the absence of demonstrable cardiac enlargement. The subsequent events are relatively easy to explain if this presumption is accepted.

Since this patient's kidneys were unable to excrete phosphorus in proper amounts, there first occurred a decrease in serum calcium, followed later by an increase in serum calcium, because phosphorus had to be bound in some insoluble form, such as calcium phosphate, to be excreted by the gastrointestinal tract⁽²⁾. Undoubtedly a great deal of phosphorus was still retained. It has been suggested^(3, 4) that this retained phosphorus acts as a stimulus to the parathyroid glands, since one of the main functions of these glands is to regulate the excretion of phosphate, especially by way of the kidneys. Thus hyperplasia of the parathyroids and a subsequent excessive secretion of parathyroid

hormone results. The greater the phosphate retention, the greater is the compensatory hypersecretion of the parathyroid hormone.

Conversely, it is a well established fact that hypoparathyroidism is associated with an inability on the part of the kidneys to excrete normal amounts of phosphate. With the appearance of excessive amounts of parathyroid secretion in the circulation, the mobilization of calcium and the decalcification of bones becomes an objective feature of the disease. Moreover, it has been demonstrated experimentally that phosphorus becomes less diffusible as more calcium is available⁽⁵⁾. Thus the vicious cycle is established (fig. 1).

The resulting clinical picture has been called "renal rickets". Even though the roentgenological findings, as stated by Dr. Baylin, are at times "typical" of rickets, this term is an unfortunate one. The rachitic manifestations, usually quite pronounced, are only secondary features of the disease⁽⁶⁾. The primary difficulty is the phosphate retention. The demineralization of the skeleton in renal rickets is the result of the hyperfunction of the parathyroid glands, a compensatory mechanism to excrete the retained phosphate.

In the differential diagnosis, only one other condition can be seriously entertained—namely, a primary hyperparathyroidism. The polymorphism of the clinical picture of hyperparathyroidism has been emphasized⁽⁷⁾. The clinical course—particularly the relatively rapid development of skeletal deformities in this young Negro—the hypertension, the high blood phosphorus and the roentgenological findings speak against a primary hyperparathyroidism.

It remains unknown why some nephritic children develop this rachitic chain of symptoms.

In the post mortem examination, Dr. Brown should find the following:

(1) Shrunken, diseased kidneys showing thickening of the pelvis and perhaps also of the walls of the ureters and evidence of extensive old and new injury (interstitial as well as glomerular) to the kidney parenchyma.

1. Griffin, M. A.: Pyelonephritis in Infancy and Childhood, *Arch. Dis. Childhood*, 9:105 (April) 1934.
2. Shelling, D. H.: Calcium and Phosphorus Studies—The Effect of Calcium and Phosphorus of the Diet on Tetany, Serum Calcium and Food Intake of Parathyroidectomized Rats, *J. Biol. Chem.*, 96:195 (April) 1932.
3. A'bright, F.; Baird, P. C.; Cone, O.; Bloomberg, E.: Studies on the Physiology of the Parathyroid Glands. IV. Renal Complications of Hyperparathyroidism, *Am. J. M. Sc.*, 187:49 (January) 1934.
4. Smyth, F. S., and Goldman, L.: Renal Rickets with Metastatic Calcification of Parathyroid Dysfunction, *Am. J. Dis. Childhood*, 48:596 (September) 1934.

5. Goldblatt, H.: Die Neure Richtung der Experimentellen Rachitisforschung, *Ergebn. d. allg. Path. u. path. Anat.*, 25:58, 1931.
6. Shelling, D. H. and Remsen, D.: Renal Rickets: A Report of a Case of Enlarged Parathyroids and Evidence of Parathyroid Hypersecretion, *Bull. Johns Hopkins Hosp.*, 57:158 (September) 1935.
7. Albright, F.; Aub, J. C.; Bauer, W.: Hyperparathyroidism. A Common and Polymorphic Condition as Illustrated by Seventeen Cases from One Clinic, *J. A. M. A.*, 102:1276 (April 21) 1934.

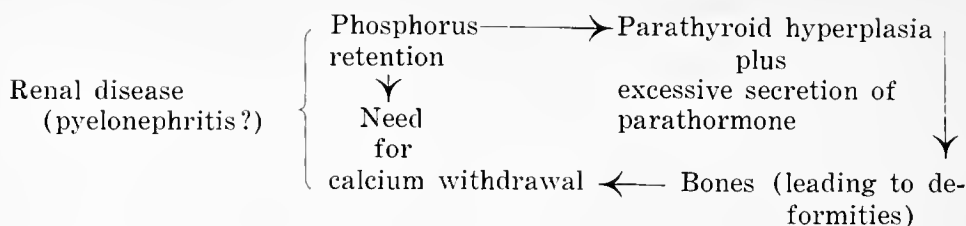


Fig. 1

ma. (2) Homogeneous enlargement and hyperplasia of all the parathyroid glands, rather than a tumor of one gland as is usual in hyperparathyroidism. (3) Decalcification of the long bones and particularly of the metaphyseal plates. (4) Early calcification in the larger arteries and varying degrees of metastatic calcinosis. The characteristic deposits⁽⁸⁾ of calcium in the kidneys as seen in hyperparathyroidism are probably lacking. (5) Possibly atrophy of the thymus.

One can only speculate as to the immediate cause of the patient's death. He lapsed into coma and died about three hours later. It is well known that excessive amounts of calcium are toxic to the experimental animal, causing death after a variable period of coma. On the other hand, parathormone intoxication might well account for this boy's death⁽⁸⁾.

Clinical Impression:

"Renal rickets"

Hyperparathyroidism (secondary)

Parathormone intoxication

Anemia, secondary of the normocytic type.

Pathological Discussion and Interpretation

DR. IVAN W. BROWN, JR.: This exceedingly interesting case is especially appropriate for a clinico-pathological conference. It presents the classical picture of a disease process which, in spite of its rather profound manifestations has been carefully worked out on a sound clinical, chemical, physiological and anatomical basis.

As Dr. Hansen-Pruss has suggested, this is a case of so-called renal rickets or secondary (renal) hyperparathyroidism.

The most conspicuous morphological changes are found in the kidneys, parathyroids and bones. The kidneys are markedly and diffusely damaged bilaterally by a chronic interstitial nephritic process. It is difficult to be certain whether this infection was of the ascending or descending variety. Certainly, there is no evidence of lower

urinary tract obstruction now, and it should be noted that both kidneys are involved to about the same degree. The only evidence we have supporting an ascending infection is some thickening of the kidney pelvis and ureters with minimal submucosal round cell infiltration. Along with the usual areas of scarring, obliteration of glomeruli and tubules and extensive interstitial cellular infiltration, one can find rather numerous collections of crystalline material in dilated tubules surrounded by areas of acute inflammation. This latter finding is of interest in light of the high blood phosphate concentration and parathyroid hyperplasia.

The parathyroid glands are uniformly enlarged, weighing together approximately three times the normal. The increase in size is due to a hyperplasia of the chief cells or parathormone producing elements. Dr. Hansen-Pruss has already called attention to the uniform enlargement of all the parathyroids in this form of hyperparathyroidism as compared to the usual single adenoma in osteitis fibrosa cystica (Von Recklinghausen's disease).

The bones show a most remarkable change not only at the growing osteochondral junction, but also through the shaft and medullary portions. In spite of the x-ray picture, the process is quite unlike the usual vitamin D deficiency rickets of childhood, for instead of the piling up of osteoid tissue and failure of ingrowth of capillaries on the diaphyseal side, we have the formation of large, irregular masses of cartilages, separated by fibrous tissue, which have widened and now make up the entire metaphysis. No vascular changes are noted, but throughout the shaft marked decalcification and fibrous tissue replacement of trabeculae and cortical bone is noted. We should like to think of the process in the bones as decalcification of growing bone rather than a rachitic change, and for this reason, prefer the term renal hyperparathyroidism to renal rickets.

The pathogenesis of this condition is well illustrated by figure 1. With the severely

8. Hanes, F. M.: Hyperparathyroidism Due to Parathyroid Adenoma with Death from Parathyroid Adenoma, *Am. J. M. Sc.* 197:85 (January) 1939.

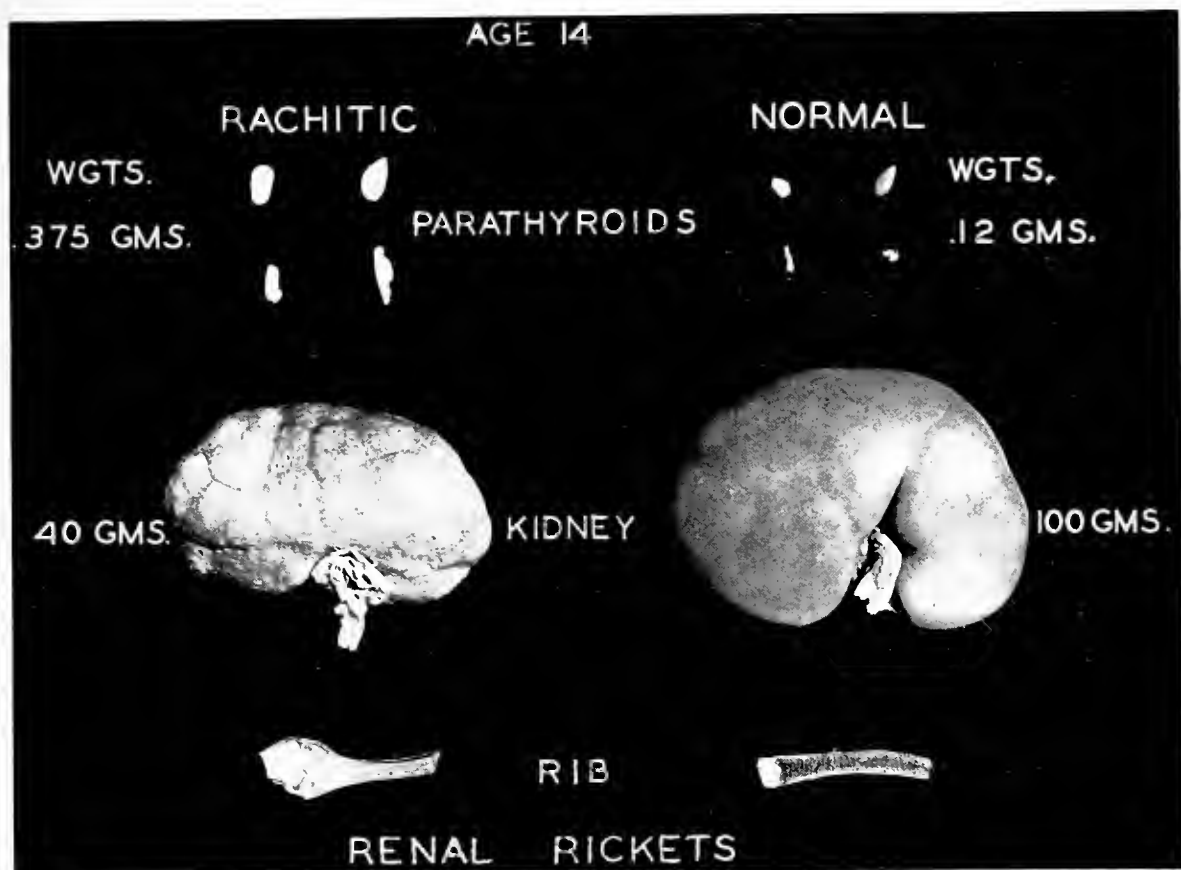


Fig. 2

damaged kidneys and reduced renal function there was a retention of phosphate in the blood which greatly disturbed the calcium-phosphate ratio. As the phosphate concentration rose the calcium level fell, not only because of the delicate balance maintained by the body between blood phosphate and calcium but also because the body in attempting to excrete phosphate through its only other mechanism, the intestine, prohibited the absorption of calcium from the intestines by the formation of insoluble calcium phosphate. There is also the possibility that more calcium than usual was excreted through the damaged kidneys. Because of the marked lowering of blood calcium and marked rise of blood phosphate, more parathormone was produced in an attempt to restore the calcium and phosphorus to their normal levels. This need for increased parathormone led to a remarkable hyperplasia of all four parathyroids.

With the lowering of the blood calcium the supply of calcium available for growing bone was decreased, and calcium was actually withdrawn from the bone by the in-

creased parathormone in order to raise the blood calcium level.

There are no areas of metastatic calcification and no calcium can be seen in the kidneys. Furthermore, we should hardly expect to find these changes in a case of such short duration.

As to the cause of death in this child we must again point to the kidneys, for the damage to these organs is sufficient to have caused death by renal failure. However, Dr. Hansen-Pruss's suggestion of parathormone or calcium intoxication cannot be ruled out. One interesting finding in the lungs is a rather marked but patchy emphysema with ruptured and distended alveoli. There is also a moderate amount of interstitial lipoid pneumonia.

Anatomical Diagnosis: Marked chronic interstitial nephritis (pyelonephritis?), bilateral; secondary (renal) hyperparathyroidism with marked genu valgum and osteochondral deformity; marked hyperplasia of all parathyroid glands; generalized decalcification of bone, especially of long bones; emphysema with early interstitial lipoid pneumonia.

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

Presentation of Case

Mr. G. W. P., a 54 year old white male, intelligent and cooperative, was admitted to the hospital for the first time July 19, 1940, in a moderate degree of shock and complaining of extreme weakness, headache, dizziness and an increase in intensity of a substernal pain which had occurred at irregular intervals since March, 1936.

His present illness began suddenly while he was on his job as a lieutenant in the city fire department. For the two preceding years he had been told that his blood pressure had gradually risen to approximately 180 systolic and 100 diastolic, although he had experienced only occasional dizziness and substernal pain. He had been having occasional check-ups since March, 1936, at which time he was examined at the Forsyth County Sanatorium following an upper respiratory infection. On the x-ray film a definite fusiform bulge of the aorta was seen behind the heart shadow. A second examination fifteen months later showed almost identically the same findings. An electrocardiogram at about this time gave no evidence of coronary disease. He complained of some numbness of the legs and feet. His past history was otherwise negative.

The physical examination revealed a well developed and well nourished male, restlessly complaining of headache and dizziness. The blood pressure was 220 systolic and 150 diastolic. The temperature and pulse rate were normal. The head, neck and chest were normal on superficial examination. A retinoscopic examination revealed a neuroretinitis. The radial artery was firm but readily compressible. The abdomen was slightly distended. There were no palpable masses or increase in liver or spleen size.

The laboratory work showed 8,800 white cells with 58 per cent segmented cells, 9 per cent stabs, 25 per cent lymphocytes, 5 per cent monocytes and 2 per cent eosinophils. The blood Kline test was negative. The urine had a specific gravity of 1.016; no albumin or sugar was present. There were 4,000,000 red cells.

Electrocardiographic tracing revealed no

significant change. A flat plate x-ray showed slight cardiac enlargement and the same fusiform bulge seen previously.

The patient was kept at absolute rest in Fowler's position with an ice cap to the head, and was put on nitrites by mouth. He was given magnesium sulfate every other morning and sedatives, and his blood pressure after three weeks dropped to 155 systolic, 110 diastolic. The headache and dizziness disappeared and he was discharged August 16, 1940. He remained out of work until November, 1940, and then was allowed to return only after he was informed what he might expect should he exert himself in any way, since his hypertensive condition resisted all medical treatment. The morning of March 17, 1941, while at stool, he experienced a sudden excruciating pain in his lower abdomen, became nauseated, vomited his breakfast, and was brought home, suffering intensely, by his fellow workers. Distention rapidly developed. During the next two days he was given enemas, prostigmin, rectal tubes, stupes, and morphine for the pain, but with no result. He was again admitted to the hospital with the diagnosis of acute intestinal obstruction possibly caused by thrombosis of a mesenteric vessel. An ileostomy was done, but the ileum was not opened because two days after operation gradual restoration of bowel movement was obtained. His blood pressure at this time was 234 systolic and 130 diastolic. Urinalysis showed 2 plus reaction for albumin. He was discharged March 30, 1941. He remained in bed at home practically all the time, getting up in a chair at few intervals. The headache, dizziness and intermittent distention continued. He was again admitted to the hospital on June 8, 1941, when it appeared that possibly another intestinal obstruction had developed. X-ray, including gastro-intestinal series and barium enema, revealed only a partial obstruction at the terminal ileum. Since some bowel movement was present no further surgical measures were attempted. At the time of discharge, three days later, his blood pressure was 240 systolic and 150 diastolic. The patient gradually grew worse and on July 6, 1941, expired, apparently in uremia.

Discussion

DR. W. M. JOHNSON: This history suggests many possibilities. The main feature

is the hypertensive cardiovascular disease that gradually progressed to a fatal outcome. At the first admission the patient complained of weakness, headache, dizziness, and substernal pain. Most likely this was a vascular crisis, such as we often see in patients with hypertension. Anger, worry, and other emotional disturbances usually precipitate these conditions, although they sometimes come on without any apparent reason. There was suddenly a rise in the blood pressure. The pain might be accounted for by the enlarged aorta demonstrated by x-ray. I do not see how the patient could have been in shock with a blood pressure of 220 systolic. He remained in the hospital at bed rest for three weeks, and was given nitrites and magnesium sulfate until his blood pressure dropped to 155 systolic, 110 diastolic. We often see such a fall in blood pressure after a rest in bed, but the pressure will not stay down.

The next point of interest is that the patient was brought to the hospital with sudden excruciating pain in his abdomen. Distention then followed. The temperature and leukocyte count are not recorded here, but they would hardly help in the diagnosis. I do not think the patient had a mesenteric thrombosis, because there was no fall in blood pressure. The blood pressure was higher than it had been before, and after a few days it went still higher. An ileostomy was done, but the ileum was not opened. I imagine that after a loop of bowel was brought out through an opening in the abdomen, the distention began going down, and since there was no apparent obstruction the ileostomy wound was closed.

There are several conditions that might have caused this sudden abdominal pain. One is our old friend appendicitis, which is always with us. While it is unusual to have such an onset, I am sure that we have all seen cases which developed rapidly. Another possibility is a volvulus or possibly a tumor of some type in the intestine that made a twist. With any type of obstruction one would expect symptoms of shock to develop. With a renal calculus one would expect pain in the back, which should be confined to one side.

One likes to make his diagnosis of a case on the basis of a single underlying pathological change, if possible. There is one diagnosis that would explain the sudden abdominal pain, the sustained high blood pressure,

and the fatal outcome. I think this patient had an aneurysm of the abdominal aorta, most likely a dissecting aneurysm, even though it is unusual for the patient to last so long in such cases. The aneurysm could have gotten far enough down to refer the pain to the abdomen rather than to the back. The first urinalysis showed no albumin and no sugar, but a specific gravity of 1.016, which is a little low and would fit in with the picture of nephrosclerosis. This nephrosclerosis was probably due to an interference with the circulation of the renal arteries, and could, I think, very well explain the onset of uremia.

In summary, the possibilities are: (1) hypertensive cardiovascular disease, (2) mesenteric thrombosis, (3) appendicitis, (4) volvulus, (5) renal infarction, and (6) dissecting aneurysm of the abdominal aorta. My first choice is a dissecting aneurysm of the abdominal aorta.

DR. T. T. FROST: Dr. Rodick, may we see the x-rays now?

DR. J. C. RODICK: These are the films made at Forsyth Sanatorium in 1936, when the patient was sent there with the possible diagnosis of tuberculosis. There is no evidence of tuberculosis, but Dr. Yoder has reported a bulging of the aorta which may have been a fusiform aneurysm. In 1937 he returned to the Forsyth Sanatorium for another examination, at which time the findings were the same. The shadow was still present, maybe not as distinct, but apparently unchanged. It had not increased in that length of time—fifteen months. He was here in March, 1941, with a clinical diagnosis of possible intestinal obstruction. The film shows a stepladder-like distention of the intestines and the "herring bone" appearance which might fit in with intestinal obstruction. Two days later he had a bowel movement, so the bowel was not opened. In June, 1941, he was admitted again. A barium enema showed a normal colon, with some spasm. There is air in the small bowel, which is not normal. At this time the patient had an acute abdominal distention—with gas but no obstruction. The colon was practically normal. The stomach films did not show anything wrong in the upper intestinal tract. There was a bulge in the aorta which was rather distinct and of the same size and location as seen in the Sanatorium films. A film taken six hours after the meal by mouth showed marked delay in

emptying of the small bowel. There was some hypoperistalsis lower down, but the stomach was not distended. Practically all of the meal was in the upper left quadrant when it should have been in the sigmoid and cecum. The emptying was not complete. There were two other shadows which I took to be the terminal ileum and a normal cecum. There is possibly a partial block of the ileum but no evidence of tumor. There is a little U-shaped shadow which might be the appendix. The man probably had a partial obstruction of the small intestine, possibly near the terminal ileum.

DR. W. M. JOHNSON: Is there anything to suggest a diverticulum?

DR. J. C. RODICK: No, not a thing.

DR. F. K. GARVEY: How would you explain the uremia when the patient came in with no abnormal findings in the urine?

DR. W. M. JOHNSON: I think the uremia could have been caused by interference with the circulation of the renal arteries by pressure from the dissecting aneurysm. This would cause damage to the kidneys—certainly later on in this case.

DR. E. L. GILBERT: Dr. Frost, when was this specimen of urine run?

DR. T. T. FROST: In July, 1940.

DR. E. L. GILBERT: A man with a persistent high blood pressure and a 2 plus reaction for albumin certainly must have had some damage to the kidneys.

DR. E. V. BENBOW: The x-ray of the chest showed broadening of the aortic shadow. The aorta descends from the chest to the abdomen. If the patient had had any definite abdominal condition, I do not believe the pain would have been as constant, especially after the piece of ileum was brought out. It would have been apt to move from place to place. I do not believe this man had an obstruction, although it is possible. It is my impression that he had a dissecting aneurysm of the aorta.

DR. W. M. JOHNSON: I think that the dissection had gotten far enough down to cause renal obstruction.

DR. C. H. MCCANTS: If there had been a mass, should you not have been able to palpate it?

DR. E. V. BENBOW: It seems to me that most cases of abdominal obstruction such as this usually come from the kidney, with nothing in the intestinal tract at all.

DR. P. E. ROBERSON: Who saw the man

when the original pain started, and how was it described?

DR. O. E. WRIGHT: I saw him before he came into the hospital the first time. The pain was substernal and was followed by distention. He seemed to be going into shock.

DR. W. DEK. WYLIE: A dissecting aneurysm would not cause obstruction of the ileum, would it?

DR. E. V. BENBOW: It could cause a paralytic ileus, and the paralytic ileus would cause gas in the small bowel.

DR. T. T. FROST: That is what he had at the time of operation.

DR. A. DET. VALK: One loop was discolored. At the time of operation we thought the patient might have had a mesenteric thrombosis. The diagnosis was not definite enough to consider doing anything but an ileostomy, and furthermore, his condition would not warrant it.

DR. W. M. JOHNSON: Did you ever see a mesenteric thrombosis with a blood pressure as high as this?

DR. A. DET. VALK: No. On the day of operation the possibility of volvulus was considered, because there was constant substernal pain, nausea and vomiting. There was no definite diagnosis, but we thought that the man might die from obstruction unless something was done. There was no gas to be seen, no diverticulum at that time, and nothing in the appendix. We made a small stab wound and brought the ileum out in case we wanted to open it later. There was no visible distention then. The pain was paroxysmal, not the type of pain usually seen in obstruction. We did feel that there was a definite obstruction, but it proved otherwise.

Dr. Johnson's Diagnosis

Dissecting aneurysm of aorta with obstruction to renal arteries.

Anatomical Diagnosis

Old dissecting aneurysm of aorta with obstruction to renal arteries.

Arteriolar nephrosclerosis, severe.

Extension of dissecting aneurysm along mesenteric vessels.

Pleural effusion.

Pulmonary congestion and edema.

Peritoneal adhesions.

Surgical scars of abdomen.



Fig. 1. Gross photograph of thoracic portion of aorta opened from the back, showing the tear in the inner layer at the beginning of the third portion of the arch. The old channel lies within the new channel.

DR. T. T. FROST: The ascending portion of the aorta is smooth and glistening and shows no arteriosclerotic changes. Just at the junction of the second and third portions of the aorta there is an old tear in the inner half of the media which leads into a dissecting aneurysm which extends the entire length of the aorta and into the common iliac and superior mesenteric vessels. This slit is linear and extends approximately one-



Fig. 2. Gross photograph of the aneurysm opened posteriorly at the level of the renal arteries, showing one renal artery partially occluded by the dissection.

third of the way around the circumference of the vessel. The margins of this slit are rounded, smooth and covered by a pale, glistening intima. The lining of the new channel is pale, smooth and glistening and covered by a smooth, glistening intima, except at one point where there is a thick, semi-organized blood clot measuring 3x5 cm. in diameter. This is yellowish and opaque and somewhat loosely attached to the wall. The new channel measures up to 5 cm. in

diameter and the old channel is considerably compressed and flattened, giving the appearance that most of the blood travelled through the new channel. The dissection involves the proximal portion of the left renal artery and extends 1 cm. along the course of the artery. This results in considerable compression of the lumen. The right renal artery has not been dissected and the blood to the right kidney comes from the original channel. The vessel is slightly reduced in circumference and the orifice is somewhat compressed. The dissection of the superior mesenteric artery extends fully half-way along its course. It shows marked compression of the original channel. Multiple sections from various portions of the aorta and the mesenteric vessels show that the new channel is lined by a moderately thick layer of adult connective tissue covered by endothelium without any evidence of inflammatory reaction of any type. The sections of the mesenteric arteries show two definite types of lesion. One is a recent dissection along the media of the large mesenteric artery which is filled with unorganized blood clot. The smaller vessel shows the end results of an old dissecting aneurysm in which the area of dissection has been completely obliterated by fibrous tissue containing small masses of blood pigment.

The right kidney weighed 105 Gm. and the left kidney weighed 85 Gm. The cortex averaged 4 mm. in width. The kidneys were essentially the same except for the difference in size. Externally they were dark red and had a uniformly finely granular surface. The cortex was uniformly narrowed. The pelvic fat was increased in amount, and the cut ends of the vessels were prominent. Sections of these kidneys show a well marked arteriolar nephrosclerosis of rather severe degree with some evidence of fairly recent acute changes in the smaller arterioles. It is evident that this man's aneurysm, as shown both by x-ray and by the microscopic sections, was present when he was first examined at the Sanatorium. His acute abdominal attacks were the result of extension of the dissection along the mesenteric arteries with great reduction in the blood supply to the small intestine. The dissection in the region of the origin of the renal arteries was of such nature as to reduce greatly the blood supply to the arteries. This had the same effect as the application of silver

clamps to the renal arteries of dogs, and resulted in an arteriolar nephrosclerosis. The periods of numbness in the lower extremities were a result of interference with part of the blood supply from the aorta to the lower portion of the spinal cord. The partial intestinal obstruction found in the second x-ray examination was probably the result of adhesions which were found kinking the cecum upon itself.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.

Evidence. Physician not required to disclose confidential information acquired in attending a patient in a professional capacity—certain exceptions.

This is a case in which the plaintiff, a life insurance company, brought an action against the defendants, the widow and administrator of the deceased, to compel the cancellation of a life insurance policy on the life of the intestate. The plaintiff alleged that the statements and representations contained in the application were untrue, material and fraudulent. The defendants denied the material allegations of the complaint and denied that the deceased, to their knowledge, made any false representations, and alleged that if any misrepresentations appeared in the policy they were immaterial and not fraudulent. When the case was heard in Superior Court a physician was introduced as a witness for the plaintiff. The testimony of this doctor, who was the family physician of the deceased, was offered for the purpose of showing that the statements and representations contained in the application for the policy in the plaintiff's company were untrue. It will be observed here that the doctor was present, ready and actually did give testimony which he apparently had gained while acting in his professional character. So far as can be determined, he did not attempt to exercise the privilege accorded physicians in Paragraph 1798 of the North Carolina Consolidated Statutes: "Communication Between Physician and Patient. No person, duly authorized to practice physic or surgery, shall be required to disclose any information which he may acquire in attending a patient in a professional character, and which information was necessary to enable him to prescribe for such patient as a physician, or to do any act for him as a surgeon: Provided, that the presiding judge of a Superior Court may compel such disclosures if in his opinion the same is necessary to the proper administration of justice." The defendant objected to this physician's testimony, claiming disqualification on his part to testify, but this objection was overruled by the trial judge and his testimony was allowed to stand. Exception and assignment of error were duly made. As a matter of explanation it would perhaps be well in this connection to differentiate between a privileged witness and one who is disqualified. Legally a witness who is disqualified is not allowed to testify, whereas a witness who is privileged may not be forced to testify, but may do so if he cares to.

The case was appealed to the Supreme Court and this tribunal stated that the statute of North Carolina requires that before a physician may testify to matters arising in his confidential relationship with his patients the trial judge must find that such testimony is "necessary to a proper administration of justice". It stated further that in the

absence of such finding appearing of record on appeal, it is reversible error for the trial judge upon the defendant's exception to admit testimony of the insured's physician tending to show that the insured in his application for life insurance had made misstatements of material facts which would avoid the insurer's liability in his suit to cancel the policy issued thereon. As a consequence the decision rendered was in favor of the defendants and the case was remanded for new trial. In further substantiation of this decision the Justice writing the opinion made the following remarks: "A physician should not be subpoenaed to court and compelled to make disclosures and open the door to the confidential relationship unless required to do so in the manner required by statute. We think this is fair to the physician and a right interpretation of the statute. This finding of record should be afforded the physician to protect him from criticism, and no doubt loss of prestige and practice if his patients object to his testifying." (Vol. 194, p. 199, North Carolina Supreme Court. Decision rendered fall term 1927).

BULLETIN BOARD

SECRETARY'S MESSAGE

What kind of Annual Meeting program would appeal to you?

We have started making preliminary plans for the 1942 Annual Meeting, which will be held next May 11, 12 and 13, at Charlotte.

It is our desire to plan the kind of meeting and present the type of program which have the greatest appeal to the greatest number of members of the Society. However, we can only guess at the desires of our members unless they will make them known. Therefore, it is suggested that each member reflect on past annual meetings which he has attended and criticize each from the standpoint of his personal likes or dislikes.

After doing this, write to your Secretary at Red Springs, setting forth the good and bad points of those meetings you have attended and offering your suggestions for the 1942 meeting.

What subjects would you like to have discussed? Who are some of the guest speakers you would like to have invited? What innovations in the set-up and program have you to suggest? Are there too many or too few section sessions; general sessions? Should there be a scientific exhibit? Do the round-table conferences appeal to you? Should there be an annual banquet? Should one session be devoted to a discussion of organization and economic, social, legislative and business questions of interest to the profession?

These are some of the questions on which we are focusing our attention. We will appreciate having your ideas and recommendations.

ROSCOE D. McMILLAN, M.D.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

Raleigh—September's 7,478 North Carolina births, as compared with 7,014 during the corresponding month last year, brought the total for the first nine months of 1941 to 64,101. This shows an increase of 3,458 over the 60,643 reported through September, 1940.

North Carolina deaths for the first nine months of 1941 totaled 24,404, which was 103 in excess of those reported for the corresponding period of 1940, and of the total for this year, through September, 3,893, or 16 per cent, were infants under a year old. During the corresponding period last year infant deaths in North Carolina totaled 3,471, giving 1941, so far, an excess of 422 over 1940.

There was a substantial decrease, however, in the number of maternal deaths—those who died in childbirth or as the result of pregnancy. Through September, this year, there had been 291 such deaths reported in the State, as compared with 351 last year, a decrease of 60. But there has been a marked increase in the number of children under two years of age dying as the result of diarrhea and enteritis. This year's reported total, so far, is 505, as compared with 375 last year, an increase of 130.

Pneumonia deaths lost ground during the first nine months of 1941, when 1,500 were reported. There were 141 more during the corresponding period of last year, when the total was 1,641.

The number of deaths from preventable accidents continues to mount. Through September, there had been 1,286 reported, against 1,038 for the corresponding period last year. Automobile fatalities, of course, lead the list.

Last year's total of diphtheria deaths during the period under consideration was 56, just 19 more than occurred this year, although this year has led, so far, in the number of cases reported, in spite of the immunization law, which went into effect early in 1939.

Deaths resulting from pellagra totaled 117 throughout the State. This was three more than occurred during the corresponding months of last year. Pellagra is a nutritional disease, and its elimination is one of the objectives of the intensive nutritional program now being waged by the North Carolina State Board of Health.

* * *

Three outstanding officials of the province of Quebec, Canada, have just completed a visit to North Carolina, where they studied the operations of the State School Health Coordinating Service, with a view to the establishment of a similar activity in Quebec. They are: Henri Groulx, minister of health and social welfare; Dr. Jean Gregoire, deputy minister of health for the province and President of the Canadian Public Health Association, and B. O. Filteau, deputy minister of education.

In North Carolina, the Canadians visited Raleigh, Greensboro and Goldsboro, making observations, and conferred with Dr. Walter Wilkins, State School Health Coordinator; Dr. John F. Kendrick, of the Rockefeller Foundation, advisor to the school health service, and others. They also held conferences in Raleigh with Dr. Carl V. Reynolds, State Health Officer, and with health and education officials in Greensboro and Goldsboro.

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

At the beginning of the autumn quarter, there were 262 medical students—76 first year, 62 second year, and 124 juniors and seniors. One hundred and sixty-nine pupil nurses were enrolled.

* * *

On October 16-18 the Annual Postgraduate Symposium on Problems of Civil and Military Emergencies was held, in which the following participated: Dr. George J. Heuer, of Cornell Medical College; Dr. John Scudder, of the College of Physicians and Surgeons, Columbia University; Dr. J. E. M. Thomson, Lincoln, Nebraska; Dr. Harry Stack Sullivan, of the Washington School of Psychiatry; Dr. Alfred R. Shands, Medical Director of the Alfred I. duPont Institute of the Nemours Foundation, Wilmington, Del.; Dr. John F. Fulton, of Yale University; Dr. Philip D. Wilson, of Columbia University; Dr. Frank D. Dickson, of the University of Kansas; Dr. Wilder G. Penfield, Director of the Montreal Neurological Institute; Dr. T. T. Mackie, of the College of Physicians and Surgeons, Columbia University; Dr. Alvan L. Barach, Columbia College of Physicians and Surgeons; Dr. George E. Bennett of The Johns Hopkins University; Dr. John M. Converse, Plastic Surgeon at the American Hospital in Britain; Captain Charles S. Stephenson, of the U. S. Naval Medical School; Dr. Russell L. Cecil, of Cornell University Medical School.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. Robert Lambert, of the Rockefeller Foundation, visited the school on October 15.

* * *

Dr. Alfred Shands, Medical Director of the Alfred I. duPont Institute for Crippled Children and the duPont Foundation, visited the school on October 16.

* * *

Dr. Tinsley R. Harrison, Professor of Medicine, was honor guest at a banquet in New York given by the New York Academy of Medicine on October 4, at which time he delivered a paper on "Effects of Renal Extracts on Hypertension".

* * *

Dr. Howard H. Bradshaw, Professor of Surgery, addressed the Lenoir County Medical Society at Kinston on October 24. His subject was "Surgical Treatment of the Suppurative Diseases of the Lung".

* * *

Dr. Russell H. Oppenheimer, Dean of Emory University School of Medicine, visited the school on October 24.

* * *

Dr. Tinsley R. Harrison, Professor of Medicine, and Dr. C. C. Carpenter, Dean, attended the meeting of the Association of American Medical Colleges in Richmond, October 27, 28, and 29.

* * *

Dr. Sidney Burwell, Dean of the Harvard University School of Medicine, held a medical clinic for the students and faculty on October 31. On the afternoon of the same day he addressed the faculty, students and invited physicians, and in the evening he gave an address on "The Role of a Medical Center in Community Progress", to which the public was invited.

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

The enrollment in the School of Medicine is larger this year than in many years. There are 46 students in the first-year class and 42 in the second-year class. In addition there are 69 graduate, undergraduate and special students registered for courses in the Medical School.

* * *

The enrollment in the School of Public Health for the year is as follows: 8 physicians; 8 sanitary engineers; 36 public health nurses. Total 78.

* * *

Dean W. R. Berryhill attended the meeting of the Association of American Medical Colleges in Richmond, Va., October 27, 28 and 29.

* * *

Dr. James C. Andrews, of the Department of Biological Chemistry of the School of Medicine, and Dr. R. E. Brooks of the Alamance General Hospital at Burlington are engaged in a study of a large cystinuric family. Of this family, twenty-four descendants of one cystinuric subject have been examined for cystinuria, and a total of eight cystinurias have been found. This is the most extensive investigation of any one cystinuric family thus far made in this state. A paper on this work is now in process of preparation.

* * *

Dr. M. J. Rosenau, who is a member of the National Advisory Committee of the Work Projects Administration, attended a meeting of the Committee in Washington, D. C., on October 1 and 2.

* * *

The following members of the faculty of the School of Public Health attended the meetings of the American Public Health Association in Atlantic City, N. J., during the week of October 13: Dr. M. J. Rosenau, Dr. H. W. Brown, Dr. W. L. Fleming, Prof. Ruth W. Hay, Dr. H. G. Baity, Dr. D. F. Milam, Miss Lake Allen, Prof. H. B. Gotaas, Dr. W. P. Richardson and Dr. Roy Norton.

Dr. Milam presented a paper before the Food and Nutrition Section entitled: "A Nutritional Survey Made on a Small North Carolina Town".

Prof. H. B. Gotaas presented a paper before the Engineering Section, entitled: "The Time Factor and Chloramine Disinfection of Contaminated Swimming Pool Waters" by Emil T. Chanlett and H. B. Gotaas.

* * *

Dr. Robert Barrett Lawson, of the faculty of the School of Public Health, attended the meetings of the American Academy of Pediatrics in Boston on October 8.

* * *

Professors Ruth W. Hay and Margaret Blee and Miss Lake Allen, of the Department of Public Health Nursing, School of Public Health, attended the meetings of the North Carolina State Nurses Association in Goldsboro on October 6 to 8. Prof. Hay presented a paper on "Adventures in Learning" and Miss Allen presented a paper "On Interviewing the Syphilitic Patient".

MEDICAL SOCIETY OF VIRGINIA

The Medical Society of Virginia held its annual meeting at Virginia Beach October 6, 7, and 8.

NEUROPSYCHIATRIC SOCIETY OF VIRGINIA

The Neuropsychiatric Society of Virginia held its October meeting at University, Virginia, in the Amphitheatre of the University of Virginia Hospital, on October 22.

AMERICAN COLLEGE OF PHYSICIANS OF NORTH CAROLINA

The 1941 Regional Meeting of the American College of Physicians of North Carolina was held at Chapel Hill October 31-November 1. The following program was presented:

Friday Afternoon, October 31

Symposium on Ulcerative Lesions of the Colon

1. Diagnosis and Management of Tuberculous Ulcerative Colitis—Dr. C. D. Thomas, Sanatorium.
2. Concepts as to the Etiology of Non-Specific Ulcerative Colitis—Dr. O. Norris Smith, Greensboro.
3. Management of Non-Specific Ulcerative Colitis—Dr. C. Graham Reid, Charlotte.
4. Amoebic Dysentery in North Carolina — Dr. Julian Ruffin, Durham.

Friday Evening, October 31

Dinner, Carolina Inn

Toastmaster—Dr. Charles Hartwell Cocke, Asheville, Governor for North Carolina, American College of Physicians.

Address—"Hereditary Diseases Which Wreck Childhood." — Dr. William Allan, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem.

Saturday Morning, November 1

1. Functional Flatulence and Its Treatment with Prostigmin Bromide—Dr. R. Henry Temple, Kinston.
2. Coarctation of the Aorta—Dr. Thomas W. Baker, Charlotte.
3. Sulphocyanates in Blood Pressure Control—Dr. Verne S. Caviness, Raleigh.
4. Chronic Alcoholism: Its Causation, Treatment and Results—Dr. M. A. Griffin, Asheville.
5. The Plasma Protein: Its Physiology Relative to the Normal and Failing Peripheral Circulation—Dr. Frank B. Marsh, Salisbury.

Dr. T. Preston White was Chairman of the Program Committee.

FIFTH DISTRICT MEDICAL SOCIETY

The Fifth District Medical Society met at the Veterans Hospital, Fayetteville, on October 23. The following program was presented:

The Clinical Findings, Pathology and Therapeutic Management in Cases of Electric Injuries—Dr. Leo Alexander, Duke University, Durham.

Allergy in General Practice—Dr. William Jacobs, Newark, N. J.

Coronary Heart Disease—Dr. W. S. Thiele and Dr. L. J. Pate, Veterans Hospital, Fayetteville.

Chemotherapy—Dr. F. C. de Lorenzo, New York City.

Treatment of Plastic Surgical Problems—Dr. Randolph R. Jones, Duke Hospital, Durham.

Following the scientific program dinner was served and the annual election of officers was held.

SEVENTH DISTRICT MEDICAL SOCIETY

The Seventh District Medical Society met at the Gaston Country Club, Gastonia, November 5, at 2 p. m. The meeting was called to order by Dr. R. H. Crawford, Councilor for the District, and the following program was presented:

The Management of Occiput-posterior Position—Dr. W. W. McChesney, Gastonia.

Bleeding During Pregnancy — Dr. Oren Moore, Charlotte.

Effective Therapy in Chronic Alcoholism—Dr. T. B. Mitchell, Shelby.

Diagnosis and Treatment of Cardiac Arrhythmias—Dr. L. Emmett Madden, Columbia, S. C.

The Procurement of Doctors for the Reserve Corps of the Army—Major Roy C. Tatum, M. C., Knoxville, Tenn.

Suggestions for the Use of Chemotherapy in the Practice of Pediatrics — Dr. Jasper S. Hunt, Charlotte.

At the banquet, which was held at 7 p. m., Dr. W. M. Roberts of Gastonia gave the Address of Welcome, and the response was given by Dr. W. C. Bostic, Sr., of Forest City. Following the banquet an address on "The Welfare of Our State Society" was given by Dr. F. Webb Griffith of Asheville. Dr. Paul H. Ringer, also of Asheville, President of the Southern Medical Association, gave the scientific address. His subject was "The Evolution of Tuberculosis".

Officers of the Seventh District are Dr. N. E. Lubchenko, Harrisburg, president; Dr. L. N. Glenn, Gastonia, vice president; and Dr. H. C. Thompson, Shelby, secretary.

EIGHTH DISTRICT MEDICAL SOCIETY

The Eighth District Medical Society met on October 28 at the Mount Airy Country Club. At the afternoon session, beginning at 2:30, the following program was presented:

1. The Family Physician and the Oculist—W. P. Speas, M.D., Winston-Salem.
2. Present Day Management of Trauma and Its Associated Syndrome Shock—R. N. Harden, M.D., Greensboro.
3. The Inflamed Pelvis — Carl V. Tyner, M.D., Leaksville.
4. Spontaneous Epiploitis with Case Reports—F. C. Hubbard, M.D., John W. Morris, M.D., North Wilkesboro.
5. Late Post Operative Follow-Up Statistics in Chronic Appendicitis — James F. O'Neill, M.D., Bowman Gray School of Medicine, Winston-Salem.

Dinner was served at 7:00, and Mr. Henry Dwire of Duke University was the guest speaker for the evening session. Officers of the Society are Dr. R. E. Smith, Mt. Airy, president; Dr. James H. McNeill, North Wilkesboro, District Councilor; Dr. E. C. Ashby, Mount Airy, vice president; and Dr. Roy C. Mitchell, Mount Airy, secretary-treasurer.

THE THERMAL BELT MEDICAL SOCIETY

The Thermal Belt Medical Society met at the Cleveland Hotel, Shelby, on October 16. Dinner was served at 7 p. m., and the following program was presented after dinner:

Effective Therapy in Chronic Alcoholism—Dr. T. B. Mitchell, Shelby.

Discussion by Dr. W. J. Lackey, Fallston.

The Local Use of Sulfonamides—Dr. William St. J. Jervey, Tryon.

The Parental Use of Sulfonamides—Drs. L. W. Hagna and Paul McBee, Marion.

Observation in China—Dr. L. L. Wilkinson, Ruthersfordton.

BUNCOMBE COUNTY MEDICAL SOCIETY

At the first October meeting of the Buncombe County Medical Society, held on October 6, Dr. Mark Griffin spoke on "Chronic Alcoholism". The discussion was opened by Dr. Burke Suitt. On October 20, Dr. Julian Moore gave a paper on "Regional Ileitis", which was discussed by Dr. A. B. Craddock.

BURKE COUNTY MEDICAL SOCIETY

The Burke County Medical Society held its quarterly meeting October 13 at the Grace Hospital at Morganton. A paper by Dr. Carl Brunts of Asheville, "Present Day Trends and Therapy in the More Common Genito-Urinary Diseases", was read by Dr. Brunts' Associate, Dr. W. L. Grantham. Dr. C. H. Armentrout gave a paper on "Potassium Thiocyanate Therapy in Hypertension".

CALDWELL COUNTY MEDICAL SOCIETY

The Caldwell County Medical Society held a dinner meeting at the home of Dr. A. A. Kent, Jr., in Granite Falls on October 23. Following a short business meeting, at which the society voted unanimously to receive Dr. Harry S. Hickman into membership, Dr. Kent gave a paper on "The Use of Amidopyrine in Acute Rheumatic Fever."

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society met in Winston-Salem at the City Memorial Hospital on October 14. Dr. James F. Marshall gave a paper on "Meckel's Diverticulum" and Dr. W. H. Sprunt spoke on "Thrombophlebitis". The Society voted to receive the following doctors into membership: Drs. R. L. Bailey, Jr., Howard Bradshaw, Arthur Grollman, C. M. Norfleet, Jr., N. M. Webster, and John R. Williams. Doctors received into membership at the September meeting of the Society were: Drs. George T. Harrell, Felda Hightower, and H. M. Vann.

HARNETT COUNTY MEDICAL SOCIETY

The Harnett County Medical Society met on October 6. A paper on the "History of Medicine in Harnett County" was given by Dr. A. T. Wyatt of Lillington.

MECKLENBURG COUNTY MEDICAL SOCIETY

The Mecklenburg County Medical Society held its first October meeting on October 7. Dr. T. C. Bost spoke on "Multiple Associated Ulcers of the Stomach and Duodenum", and Major E. A. Keeny, U.S.M.C., discussed "Medical Problems Concerned With Civilian Population and Soldiers During War Maneuvers in the Carolinas." On October 21 Dr. R. Z. Query gave a paper on "Hyperparathyroidism" and Dr. A. D. Taylor spoke on the "Present Status of Fever Therapy".

WAYNE COUNTY MEDICAL SOCIETY

The Wayne County Medical Society met in Goldsboro on October 3. Dr. C. E. Howard discussed "Color Photography in Skin Diseases", with illustrative slides.

WANTED—MEDICAL JOURNALS

The publishers are completely out of copies of the North Carolina Medical Journal for April, 1940 and April, 1941. The Library of Congress in Washington wishes a complete bound volume of 1940 issues and we are unable to supply it unless we can secure a copy of the April issue. If you can spare a copy of either April issue, 1940 or 1941, please mail to the North Carolina Medical Journal, Box 456, Winston-Salem. The publishers will reimburse you.

CHILDREN'S BUREAU NEEDS MATERNAL AND CHILD HEALTH SPECIALISTS

Employment registers are to be established by the Civil Service Commission to fill maternal and child health specialist positions in the Children's Bureau of the Department of Labor. Vacancies in similar positions in State agencies cooperating with the Children's Bureau may also be filled from these registers at the request of the States concerned. The examination announcement just issued by the Civil Service Commission to recruit persons for these positions which pay from \$3,200 a year to \$5,600 a year allows the filing of applications until November 15, 1941.

There are three options in which persons may qualify,—pediatrics, obstetrics, and orthopedics. A written test will not be given for these positions. Competitors will be rated on their education, experience and corroborative evidence. Applicants must have graduated from a medical school of recognized standing with an M.D. degree and must have served a 1-year internship. In addition they must have had full-time post-internship clinical training as well as other appropriate experience in the option selected and in the type of work in which they seek appointment.

OFFICE OF CIVILIAN DEFENSE

Mayor F. H. LaGuardia, Director of the Office of Civilian Defense, announces the appointment of Miss Marian G. Randall as Nursing Consultant in the Medical Division of the Office of Civilian Defense.

Miss Randall is on leave of absence from the Henry Street Visting Nurse Service, New York City, where she is Assistant Director.

For eight years a member of the Research Staff of the Milbank Memorial Fund of New York City, Miss Randall conducted studies of public health nursing as related to administrative practices. A series of these studies has been published in pamphlet form.

NEWS NOTES

Dr. Paul Ringer of Asheville has been appointed by Governor Broughton to the Board of Trustees of the North Carolina Sanatoria for Tuberculosis.

* * *

Dr. Aubrey Hawes of Charlotte presented a paper before the September meeting of the Chesterfield County (S. C.) Medical Society. His subject was "Present Status of Prostatic Surgery".

* * *

Dr. C. L. Corbett of Dunn has been appointed to the Dunn School Board.

* * *

Dr. H. B. Ivey, Goldsboro, has been made a Fellow in the American College of Radiology.

* * *

Dr. Edgar A. Thacker has come to Goldsboro to be associated with Dr. M. E. Bizzell in the practice of Ophthalmology and Otolaryngology.

* * *

Dr. William H. Smith of Goldsboro was elected vice president of the State Tuberculosis Association.

* * *

Dr. R. L. Garrard, formerly of Morganton, has moved to Greensboro.

CORRECTION

Dr. C. P. Jones, Jr., has asked that a correction be made in his discussion of Dr. Eugene Keiter's paper, "Treatment of Bacillary Dysentery in Infants", which appeared in the September issue of the *North Carolina Medical Journal*. On page 483 his statement was transcribed: "For approximately thirteen weeks we kept the baby on fluids by mouth." This should read: "For approximately three weeks we kept the patient on fluids by mouth."

AUXILIARY

RECOMMENDED 1941-1942 PROGRAM
FOR THE AUXILIARY TO THE MEDICAL
SOCIETY OF THE STATE OF
NORTH CAROLINA

MRS. JOSEPH ELLIOTT, *Program Chairman*

The invitation from our President to write an article for the Auxiliary section of the November JOURNAL was an answer to the Program Chairman's desire to get suggestions and plans for programs before county auxiliary program chairmen and before others who are concerned about them.

As our name signifies, we are organized to aid—to be auxiliary to—the Medical Society.

What is the duty of the program chairmen "in living up to this name?" To plan a program that will "attract new members, increase membership at each meeting and stimulate interest in the educational work as suggested by the Medical Society."

One of the first needs of each county auxiliary, then, is an active program chairman. The State Program Chairman can formulate a general plan for programs and can gather approved material, but the county program chairman must make the individual and special program to be given before a certain auxiliary.

Will each county program chairman please mail her name and address, with that of the president of her auxiliary, to the State Program Chairman as soon as possible?

In answer to an appeal in my behalf from Dr. Roscoe McMillan, Secretary-Treasurer of the State Medical Society, Dr. Bauer, Director of the A. M. A. Bureau of Health Education, writes me that special emphasis this year will be on *national defense* and *nutrition*.

Dr. Carl V. Reynolds, State Health Officer,

suggests *nutrition* and *control and cure of venereal diseases* as the outstanding themes this year during our preparedness program, and recommends that we "organize local committees to stimulate public interest in these subjects."

Mrs. William Hibbetts, National Program Chairman, stresses the importance of planning programs which will educate the doctor's wife for her part in the defense program of our country. She reminds us that *nutrition* is one of our national problems, that Germany provided for this part of her war program, and that Great Britain has learned that an adequate diet is one of her chief problems. The health and the morale of any people are built on proper diet. It is not only people of low incomes who suffer from malnutrition, but many of means who are not properly informed and do not use the food that is available. "Foods, personal likes and dislikes, as well as lack of nutritional knowledge, are primarily responsible for these." Mrs. Hibbetts suggests that "First Aid" lessons be incorporated in our program. A twenty-hour nutrition course and "First Aid" lessons are to be had through the American Red Cross and are most timely. Because these are held by qualified persons only, the A. M. A. Bureau of Health Education thinks it wise that, unless the Auxiliary includes a person well trained in nutrition, it would be better for its members to organize and promote these courses rather than give them.

Last, but not least, comes "a gentle reminder", which we consider "a royal command", from our own President, Mrs. Smith, in this form: "Can programs on the two Bed Funds and Endowment Fund and Student Loan Fund be included?"

As Program Chairman, I recommend that our program studies for the coming year be chosen in accordance with the above suggestions; that the county program chairman have, and read *Hygeia*, especially a series of articles, "Essentials of an Adequate Diet" by Dr. Ruth Cowan Clouse; that she read the *Bulletin*, particularly Mrs. Hibbett's article, "The Doctor's Wife and Defense" in the Post-Convention number; that she familiarize herself with other authentic, available material on *nutrition* and on *control and cure of venereal diseases*, making use of health publications listed below; that she consider herself a committee of one to

stimulate, through carefully planned programs for her auxiliary, public interest in these subjects; that she encourage her membership, through these programs, to take advantage of the First Aid and Nutrition courses being given by the Red Cross; that she have the local advisory council approve the program, or any proposed project, before undertaking it in her group; and finally, that she feel free to ask help, in securing speakers or material on special subjects, from the State Program Chairman.

Sources of Program Material

Hygeia, The Health Magazine, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

Bureau of Health Education, same address.

Bulletin of the Woman's Auxiliary to the American Medical Association, Mrs. Charles Werner, Circulation Manager, 531 North 24th Street, St. Joseph, Missouri.

Bureau of Home Economics, Department of Agriculture, Washington, D. C.

To be had on request to the State Program Chairman:

"Nutrition, The Armor of Robust Health," The Nutrition Advisory Committee to the Coordinator of Health, Welfare, and Related Defense Activities.

"Twenty Questions, on 'Enriched' Flour and Bread," Nutrition Division, Office of Coordinator of Health, Welfare, and Related Defense Activities.

"Eat The Right Food," Bureau of Home Economics, United States Department of Agriculture.

In the hands of the State Program Chairman for lending, if returned promptly, are:

"Information Please", by Mrs. William Hibbetts.

"An Auxiliary Member Should Know", by Mrs. Bonar White.

"Health Publications of A. M. A. Price List"—1941.

"Nutrition Study Suggestions for American Medical Association Women's Auxiliaries", from A. M. A. Bureau of Health Education.

"Canned Food Reference Manual", American Can Company, 230 Park Avenue, New York.

"History of McCain Bed", compiled by Mrs. A. A. Kent.

"History and Duty of Loan Fund Chairman", compiled by Mrs. R. A. Moore.

If there is no local Red Cross Chapter, inquiries can be addressed to Miss Melva Bakkie, Nutrition Consultant, National Red Cross, Washington, D. C.

Information can be obtained, also, from the State Nutrition Committee Chairman, Dr. Carl V. Reynolds, Raleigh.

Speakers

For speakers on the nutrition program, Dr. Carl Reynolds suggests that you contact: Dr. J. F. Kendrick, Consultant, or Dr. Walter E. Wilkins, Coordinator, of the School Health Coordinating Service, State Board of Health, Raleigh, or Dr. D. F. Milam, Cooperative Nutrition Study, Chapel Hill.

For speakers on venereal diseases, Dr. J. C. Knox, Director of Epidemiology, State Board of Health, Raleigh; Dr. John J. Wright, or Dr. William L. Fleming, both of the School of Public Health, University of North Carolina, Chapel Hill.

As speakers on the two bed funds and Student Loan Fund, contact our own well informed members: Mrs. P. P. McCain, Sanatorium; Mrs. James Buren Sidbury, 15 North Fifth Street, Wilmington; or Mrs. C. F. Strosnider, Goldsboro.

Following is a list of North Carolina physicians qualified to speak before auxiliary groups, who will, Dr. Roscoe D. McMillan feels sure, be glad to cooperate in any way possible:

Dr. George F. Carrington.....	Burlington
Dr. F. H. Garrison.....	Lewiston
Dr. S. M. Bittinger.....	Black Mountain
Dr. Louis W. Elias.....	Asheville
Dr. F. Webb Griffith, President Medical Society of the State of North Carolina	Asheville
Dr. Julian A. Moore.....	Asheville
Dr. Paul H. Ringer.....	Asheville
Dr. James W. Vernon.....	Morganton
Dr. Caroline McNairy.....	Lenoir
Dr. Ben F. Royal.....	Morehead City
Dr. Ben Gold.....	Shelby
Dr. W. J. Lackey.....	Fallston
Dr. H. C. Thompson.....	Shelby
Dr. Robert S. McGeachy.....	New Bern
Dr. O. L. McFadyen.....	Fayetteville
Dr. M. T. Foster.....	Fayetteville
Dr. W. T. Rainey.....	Fayetteville
Dr. J. A. Shaw.....	Fayetteville
Dr. J. R. Terry.....	Lexington
Dr. W. R. Berryhill, Dean, School of Medicine, University of North Carolina School of Medicine.....	Chapel Hill
Dr. W. C. Davison, Dean, Duke University School of Medicine.....	Durham
Dr. F. M. Hanes.....	Durham
Dr. Arthur H. London.....	Durham
Dr. I. H. Manning.....	Chapel Hill
Dr. N. P. Battle.....	Rocky Mount

In Memoriam

HOUSTON B. HIATT, M.D.

By I. T. Mann, M.D.

Houston B. Hiatt, M.D., died August 28, 1941, in a hospital at Tarpon Springs, Florida, after a lingering illness.

Dr. Hiatt was born in Greensboro, North Carolina, on September 16, 1886, the only child of the late J. Rufus Hiatt and Mrs. Ella Hiatt. At the age of 7 he moved with his parents to Fayetteville, and five years later to Clinton, where his mother lives at the present time.

He received his early education in the elementary and high schools of Clinton. He also attended Horner's Military Academy, and the University of North Carolina, and in June, 1907, graduated from the University of Maryland with the degree of Doctor of Medicine. He served his internship in Johns Hopkins Hospital.

One month after graduating he married Miss Kathleen Sadtler, of Baltimore, Maryland. To this union were born three children—a son who died in infancy; Houston, Jr., who died in 1929; and "Billie" (Mrs. Ned McEachern), of Charlotte, who survives. Also surviving are his widow, who lives in Oldsmar, Florida; his mother, Mrs. Ella Hiatt, of Clinton; and one grandson, Teddy McEachern, of Charlotte.

Dr. Hiatt was long active in medical affairs in North Carolina. He began practice in Clinton, but soon moved to Asheboro, where he practiced until moving to High Point in 1913.

He was a faithful member of the Guilford County Medical Society, serving as its president in 1931. He was a member of the North Carolina Medical Society, and a Fellow of the American Medical Association. He was also a charter member of the High Point Rotary Club, a member of the Board of Directors of the Salvation Army, an officer of the Episcopal Church, and a member of the Masonic Order and the Shrine.

In 1916 Dr. Hiatt joined the First North Carolina Field Hospital N. C. National Guard, and saw over a year's service on the Mexican border, as First Lieutenant, resigning to re-enter private practice upon the company's return to this state. During the World War he, with the late Dr. Hugh W. McCain, served as medical examiner on High Point's local Draft Board. He volunteered for Army duty in July, 1918, but his commission was not issued until after the Armistice, and was returned.

Dr. Hiatt maintained a life-long interest in youth. He was active in the promotion of the Boy Scout movement in High Point, and was chiefly instrumental in the formation of a Parks and Juvenile Commission in High Point, serving as its first chairman.

He was a member of the staff of the Guilford General Hospital, and of the Sternberger Hospital.

Houston Hiatt was devoted to his friends, hundreds of whom mourn his passing. There has passed from the lives of those who knew him best a friend whose particular "niche" no one else can fill.

"H. B.," as he was affectionately known, will long be remembered by all who knew him.

So I am glad, not that my brother has gone,
But that the earth he laughed and lived upon
Was my earth too;
That I had closely known and loved him,
And that
My love I'd shown.
Tears over his departure?
Nay, a smile—
That I had walked with him a little while.

Dr. B. C. Willis.....	Rocky Mount
Dr. Paul A. Yoder.....	Winston-Salem
Dr. Wingate M. Johnson, Editor North Carolina Medical Journal.....	Winston-Salem
Dr. Coy C. Carpenter, Dean Bowman Gray School of Medicine of Wake Forest College.....	Winston-Salem
Dr. E. A. MacMillan.....	Winston-Salem
Dr. J. B. Whittington.....	Winston-Salem
Dr. F. M. Houser.....	Cherryville
Dr. L. N. Glenn.....	Gastonia
Dr. Thomas L. Carter.....	Gatesville
Dr. N. C. Daniel.....	Oxford
Dr. Fred M. Patterson.....	Greensboro
Dr. D. W. Holt.....	Greensboro
Dr. C. W. Hudson.....	Greensboro
Dr. Marion Y. Keith.....	Greensboro
Dr. R. O. Lyday.....	Greensboro
Dr. Frank A. Sharpe.....	Greensboro
Dr. Frederick R. Taylor.....	High Point
Dr. W. G. Suiter.....	Weldon
Dr. J. R. McCracken.....	Waynesville
Dr. J. Gaddy Matheson.....	Ahoskie
Dr. R. L. Murray.....	Raeford
Dr. H. F. Easom.....	Sanatorium
Dr. P. P. McCain.....	Sanatorium
Dr. C. D. Thomas.....	Sanatorium
Dr. James W. Davis.....	Statesville
Dr. Ross S. McElwee.....	Statesville
Dr. Battle A. Hocutt.....	Clayton
Dr. Waylon Blue.....	Jonesboro
Dr. Floyd L. Knight.....	Sanford
Dr. Vance P. Peery.....	Kinston
Dr. Paul F. Whitaker.....	Kinston
Dr. L. A. Crowell, Jr.....	Lincolnton
Dr. John W. Williams.....	Williamston
Dr. Guy S. Kirby.....	Marion
Dr. Hamilton W. McKay.....	Charlotte
Dr. Oren Moore.....	Charlotte
Dr. John Q. Myers.....	Charlotte
Dr. Andrew D. Taylor.....	Charlotte
Dr. C. A. Peterson.....	Spruce Pine
Dr. J. G. N. Cushing.....	Pine Bluff
Dr. C. R. Monroe.....	Pinehurst
Dr. J. B. Sidbury.....	Wilmington
Dr. H. D. Walker.....	Elizabeth City
Dr. K. B. Pace.....	Greenville
Dr. W. I. Wooten.....	Greenville
Dr. Thomas M. Watson.....	Greenville
Dr. G. C. Milham.....	Hamlet
Dr. J. Fred Nash.....	St. Pauls
Dr. John B. Ray.....	Leaksville
Dr. Carl V. Tyner.....	Leaksville
Dr. C. W. Armstrong.....	Salisbury
Dr. Robert H. Crawford.....	Rutherfordton
Dr. J. Street Brewer.....	Roseboro
Dr. E. A. Livingston.....	Gibson
Dr. J. G. Faulk.....	Monroe
Dr. J. H. Wheeler.....	Henderson
Dr. Hubert B. Haywood.....	Raleigh
Dr. J. C. Knox.....	Raleigh
Dr. Ben J. Lawrence.....	Raleigh
Dr. A. S. Oliver.....	Raleigh
Dr. Hubert A. Royster.....	Raleigh
Dr. A. C. Bulla.....	Raleigh
Dr. Carl V. Reynolds, State Health Officer.....	Raleigh
Dr. C. H. Peete.....	Warrenton
Dr. Frank L. Whelpley.....	Goldsboro
Dr. Donnell B. Cobb.....	Goldsboro
Dr. H. B. Ivey.....	Goldsboro
Dr. S. B. McPheeters.....	Goldsboro
Dr. William S. Smith.....	Goldsboro
Dr. Charles F. Strosnider.....	Goldsboro
Dr. James H. McNeill.....	North Wilkesboro
Dr. George W. Mitchell.....	Wilson

BOOK REVIEWS

The Therapy of the Neuroses and Psychoses.

By Samuel Henry Kraines, M.D., Associate in Psychiatry, University of Illinois, College of Medicine; Assistant State Alienist, State of Illinois; Diplomate of American Board of Psychiatry and Neurology. 512 pages. Price \$5.50. Philadelphia: Lea and Febiger, 1941.

This is one of the most helpful volumes dealing with the neuroses, the psychoses, and their numerous variants that this reviewer has seen in a long time. It is based largely upon the author's own experience, as interpreted by a keenly analytical mind and flavored by abundant common sense. Numerous cases from his records illustrate the various conditions commonly encountered. The criticism might be offered that many of these cases are rather too elementary—but that is at least preferable to the far-fetched conclusions of the Freudians. The author's discussion of the part played by sex is sane and practical. He broaches a highly controversial subject when he advocates the use of hypnotism in the treatment of certain conditions. It is true that he does not regard it as a cure-all and that he recognizes its limitations; but perhaps the majority of his fellows would oppose its use in any case. Certainly a physician who used it frequently might be subject to criticism, both from his colleagues and from the public.

With this minor objection, the book can be unreservedly recommended both to practitioners and to students.

A Textbook of Ophthalmology. By Sanford R. Gifford, M.A., M.D., F.A.C.S., Professor of Ophthalmology, Northwestern University Medical School, Chicago; Attending Ophthalmologist, Passavant Memorial and Cook County Hospitals. Second edition, revised. 470 pages, with 215 illustrations. Philadelphia: W. B. Saunders Company, 1941. Cloth, \$4.00.

In this second edition of Gifford's textbook the section dealing with the changes in the fundus in cardiovascular-renal disease, and the chapter on the sclera have been revised. The use of the sulfonamides in treating certain diseases of the eye, and the relationship of vitamins A and B to diseases of this organ have also been added. Fifteen new color cuts also add greatly to the value of the text.

There are several minor errors in the book, such as the use of "hyperparathyroidism" on page 427, when "hypoparathyroidism" is meant, and, in the section on disorders of metabolism and of the endocrine glands, the omission of any mention of pituitary diseases (though these are mentioned elsewhere in the book). Tumors of the hypophysis often first manifest themselves by their effects on the eyes, the patient presenting himself to the ophthalmologist before any of the later manifestations of pituitary deficiency become evident. A more general use of an x-ray of the skull by ophthalmologists in unexplained cases of optic atrophy would seem to be desirable.

The book can be recommended without qualification for the use of the general practitioner of medicine as a concise and well written resume of the conditions in the eye which he is apt to encounter.

The Pharmacological Basis of Therapeutics.

By Louis Goodman, M.A., M.D., Assistant Professor of Pharmacology and Toxicology, Yale University School of Medicine, and Alfred Gilman, Ph. D., Assistant Professor of Pharmacology and Toxicology, Yale University School of Medicine. New York: The Macmillan Company, 1941. Price, \$12.50.

The authors have fulfilled a long felt need for an up-to-date text on pharmacology for students and practitioners of medicine. Most of the available texts have become stereotyped in form and lack an adequate treatment of the many advances in pharmacology and therapeutics of recent years. The present volume is an excellent correlation of basic physiological principles and practical application of drugs in therapeutics. The use of this text by students and teachers of pharmacology should aid in resurrecting this subject from the lamentable state into which it has fallen in most schools of medicine. The host of medical drugs which have been introduced into medical practice in recent years are disclosed in this volume. The general practitioner will therefore find the book of value in enlightening him on the rationale of modern methods of therapy.

Vitamin Therapy in General Practice.

By Edgar S. Gordon, Associate in Medicine, University of Wisconsin; and Elmer L. Sevringhaus, Professor of Medicine, University of Wisconsin. Chicago: Year Book Publishing Company, 1941.

This is an excellent, concise resume of our knowledge of the clinical application of the vitamins. Recent advances in this field have been so rapid that texts of even a few years ago are entirely inadequate. The general practitioner will, therefore, find this volume of great help in keeping up-to-date with this important field of practical medicine. Chapters on the minerals, protein, carbohydrate and fat factors in the diet, as well as those on weight control, dental problems and economics of nutrition, give the book a generally well-rounded viewpoint of the subjects which are apt to confront the practitioner.

Clinical and Experimental Investigations of the Genital Functions and Their Hormonal Regulation.

By Bernhard Zondek, M.D. 260 pages, 59 figures. Baltimore: Williams and Wilkins Company, 1941. Price, \$4.50.

This is a relatively short monograph which gives a summary of the clinical and experimental investigations which have been carried out during the past six years by Bernhard Zondek, one of the discoverers of the Aschheim-Zondek test. It contains an excellent survey of the historical developments in sex endocrinology, and chapters on the following subjects: the occurrence of some estrogenic substances in nature; experimental and clinical investigations on the percutaneous use of estrogenic and androgenic hormones; the effects of protracted treatment with high dosage of estrogenic hormone; morphological changes induced by prolonged treatment; clinical investigations concerning the cycle of the female organism and the mechanism of menstruation. The book is written in a simple, concise style and brings together the mass of data which the author has contributed to endocrinological science. It will prove of value to all those interested in the recent advances in female sex endocrinology, although it is probably beyond the needs and interest of the average practitioner.

Solution Added to Squibb Group of Aminophylline Products

To provide for all forms of administration of aminophylline, E. R. Squibb & Sons, New York, have added Solution Aminophylline Squibb to their previously introduced line of tablets and powder. The solution is supplied in 2 cc. ampuls containing per cubic centimeter 3% grains (0.25 Gm.) of aminophylline in sterile aqueous solution for intramuscular injection; and 10 cc. ampuls containing 3% grains (0.25 Gm.) per cubic centimeter of aminophylline in sterile aqueous solution for intravenous injection.

Aminophylline (theophylline with ethylene diamine U.S.P. XI) is rapidly absorbed, producing prompt physiologic response. Recognized indications for the use of aminophylline are: as a diuretic and myocardial stimulant; in bronchial asthma; Cheyne-Stokes respiration; paroxysmal cardiac dyspnea; and for the relief of pain due to coronary sclerosis.

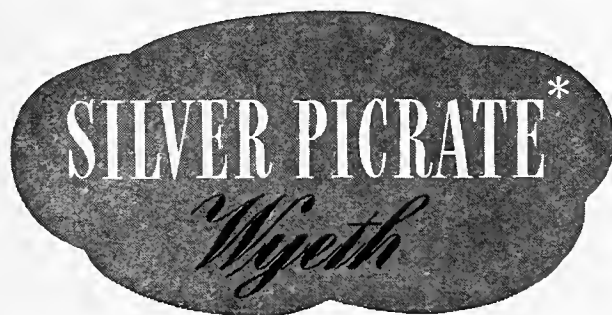
Whether the drug should be given orally, intravenously or intramuscularly depends upon the judgment of the physician.

The Survival of the Fittest—If we view a community of pines from a distance, the whole group appears to be a homogeneous mass of verdure, but if we examine it more closely we find it to be made up of individual trees. The most superficial scrutiny shows a gross disproportion in the growth of these trees. Some appear to be sturdier and healthier than their comrades. Their growth has been greater, and they obviously get more sunlight from the air and water from the ground than their less fortunate fellows. The stronger ones grow to the hurt and even to the death of surrounding trees. Yet we do

not express this greater growth in teleological terminology, or impute hostile motives to the more successful tree. We speak of the survival of the fittest, but do not imply a conscious attempt to destroy one another. This condition can better be expressed in functional terms, as follows: There is a propensity on the part of all trees to grow, and it is a function of certain elements in the trees to get all the sun and water that they can. As a result of the carrying out of this function, growth takes place. The better endowed trees prosper disproportionately. The effect on the other trees is secondary and incidental. Whether we subscribe to Darwin's evolutionary theory of a constant betterment in nature, to Spengler's theory of a rhythmic rise and fall for better or worse or to Sorokin's concept of a cycle of cultures is not important. Throughout Nature there is a tendency on the part of organisms to develop and grow. I take it that no one will dispute the contention that this principle applies to man as well as to pine trees. Yet, when we study the pine tree our attitude is relatively dispassionate and correspondingly less biased, whereas the study of man immediately involves the operation of factors not present when judging the rest of Nature. Among these factors are the ethical, humanitarian and moral. Nevertheless, this does not invalidate the principle of Darwin's law of the survival of the fittest. It is natural for man to grow. There are elements in his make-up that function to get the wherewithal by which growth takes place. The hurt, if any, to other elements in society is secondary and incidental. The growth of certain persons is bound to be greater than that of others.—A. Warren Stearns: *The Role of the Physician in a Competitive Society*, New England J. Med. 224:881 (May 22) 1941.

For the local Treatment of Acute Anterior Urethritis

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Silver Picrate, Wyeth, has a convincing record of effectiveness as a local treatment for acute anterior urethritis caused by *Neisseria gonorrhoeae*.¹ An aqueous solution (0.5 percent) of silver picrate or water-soluble jelly (0.5 percent) are employed in the treatment.

1. Knight, F., and Shelanski, H. A., "Treatment of Acute Anterior Urethritis with Silver Picrate," *Am. J. Syph., Gon. & Ven. Dis.*, 23, 201 (March), 1939.

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The Effect of Aging on the Body—Clinical experience shows that a man of fifty may require ten times as long to recuperate fully from an acute infection as a child of five. Therefore, convalescence must be prolonged in proportion to age. The human body has a liberal credit structure on which it may draw in periods of emergency. Violent exertion may lead to an oxygen deficit, which may require some little time for repayment when hyperpnea is continued after the cessation of exertion. Likewise,

one may "borrow" against the future by "running on one's nerve", by using stimulating drugs, such as caffeine, or by ignoring the warnings of fatigue. Such borrowing is against the tissue reserves of energy and fuel. Sooner or later, these debts must always be paid. With aging, credit gets tighter. Not only is there less margin, but the call for payment becomes more urgent. Fatigue comes on more readily, and more quickly turns into exhaustion. It is increasingly imperative, therefore, that the warnings of fatigue be heeded as we grow older. Preventive geriatric advice should include emphasis on the importance of slowing the pace, avoiding over-fatigue and taking sufficient time for recuperation. Thus, the final reckoning may be postponed.—Edward J. Stieglitz: *The Potentialities of Preventive Geriatrics*, New England J. Med. 225:253 (August 14) 1941.

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\$75.00 weekly indemnity, accident and sickness	

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HOW CAN I PREPARE MY CHILD FOR THE FUTURE?

JOHN A. SHAW, M. D.

FAYETTEVILLE

Several parents have asked me recently, "What must I teach my child?", and this question suggested to me the subject of my talk today. What can we do for the children of today to equip them for the duties of tomorrow, to enable them to get the most happiness out of living and to keep for themselves their heritage of a free country? We should provide them with some fundamentals which have been proven sound and to which they can turn again and again for help in solving their problems.

We cannot foresee the conditions which we must prepare them to meet, but unless we are exceedingly optimistic most of us will agree that they will be very different from any experienced in the past. There is now and perhaps there will be in the future more realism in life. The protective coat of a highly developed civilization may be partially or entirely wiped off. You may say that I am a pessimist, but I say that those who are too optimistic today may some day be the theme of a treatise on "While America Slept." Our golden age is past for a while. We have been the world's most favored people, living in the nearest modern approach to a Garden of Eden, but our standards of living will of necessity come down.

The genius of this country, which has been directed toward the production of things to make life more abundant, is now being carried into other channels. We are going to have to do more for ourselves, and to find pleasures in ourselves. We will have fewer of them served to us at very little cost and with practically no exertion on our part. It

is going to be a harder existence that our children will face.

There will be less chance for personal initiative and more necessity for conforming to a general pattern that will gradually be evolved. The new conditions may be of such nature that all will have to be brought under stricter rules and more direct control. While we shall still be the masters of our own destinies, we shall be regulated more, and the regulations may be burdensome to those who have been taught to recognize very little authority.

The child of today—the citizen of tomorrow—is going to need all the fortitude, courage and adaptability of the first settlers to work out a happy and successful existence. What can we do to help him?

As physicians, our first thoughts are naturally devoted to preserving for these children healthy bodies and normal minds.

As our preparedness program expands, there is going to be a greater shortage of doctors for the civilian population. There may be a tendency to lessen the work done by the national and state bureaus along the lines of child welfare. There may be, if we are not careful, a tendency to revert to symptomatic treatment and to think less in terms of a lifetime when we examine a child. There may be a shortage of medicines; there may be epidemics, especially in those areas where many are gathered together. There may be shortages of certain foods.

Before any of these possibilities face us we must prepare to meet them. As regards the possible shortage of doctors, there is little to be done except by reducing our outside activities as much as possible in order

to be better prepared for the eventuality if it occurs.

At the first signs of any lessening of governmental health work, doctors should appeal as a body for no curtailment. The nation is going to need a sturdy race and the medical profession is the one most responsible for this. They should be the first to point this out to the public and the governmental agencies.

The tendency to symptomatic treatment will be a personal problem for the individual doctor. We have gone a long way in preventive medicine and the need for it was never more imperative. The profession should redouble its efforts to get the whole population protected from as many diseases as possible. The work that has been done in the past makes this easier. We should try to continue the education along health lines that has already done so much for the people.

This nation has never had a scarcity of foods and medicine. We have had too much. While other nations have had to try to preserve foodstuffs, we have had to restrict production. We have had to kill hogs and restrict farming so that our surplus would not be too great. We shall always have plenty of food requisites. We may have less of the delicacies. The can opener may be relegated to a place of less importance in the household, but there will be plenty to put in the old-fashioned jar. Home canning should regain much of its lost popularity. Thrift in feeding the family and care in the planning of diet must be practiced. People will "eat to live", not "live to eat." Medicines of importance will be had in abundance, but, as with foodstuffs, there may be some scarcity of those that are not essential.

Just as important as preserving the health of our children is teaching them to use their bodies and minds to secure both mental and economic security. I believe that children should be taught to work and to adapt themselves to any situation. The average American child is adaptable and will learn to take care of himself if the occasion arises. In recent years, however, the trend has been to give the child more and more pleasures and to require less and less the assumption of any duties. To give much and expect little is the usual custom of the American parent. This theory may be all right if the conditions the child will face are those that will conform to a familiar pattern. On the other

hand, is it fair now to make life for the child a bed of roses when the path to be trod in the future may be covered with thorns instead of rose petals? We should teach him to work. The more anyone is able to do for himself, the better he will be fitted to face any situation in which he may be placed. A gradual realization that changes are taking place is much better for a young mind than the sudden discovery of the fact. Unquestionably, in my opinion, the present younger generation is not as well fitted to face the vicissitudes of life as were their parents. It is not their fault, but the fault of their parents, who want the best for their children and who are putting protective walls around them. Many parents pride themselves on making things easy for their children, and by the very giving and spoiling have wrecked their chances of happiness.

For the parent who asks, "What must I teach my child?", I say again: Teach them to work. Instill in them faith in themselves, faith in their country and faith in their God. Start with the home and teach them the meaning of authority; teach them respect. Let them know of the hardships of past generations and help them to formulate ideals from which we, as a nation, have drifted away—ideals, beliefs and faith which were the cornerstone in the formative years of our country. Teach them to use their hands; teach them the real glory of labor, of a job well done. Teach them to get away from the artificial and to come back to the natural things of life. This applies not only to pleasures, but to the very art of living. Help them to learn to be independent and in a large measure to be able to carry on for themselves.

In attempting to get across to youth that this is their country, that they in their generation will own and control it, would it not be a good idea to get for each child a share of stock, small though it might be, in this, their own corporation? Take the money that would be put in some non-essential and get them a baby bond. Explain what it is; put across to them that it is a share of stock in their government, and that its value will depend upon the continued stability of their government. Get this for them by depriving them of something else and let them know it. This might, in some cases, give them a tangible instead of an intangible idea of what their connection with their government is.

In conclusion, would it not be wise to get back gradually to some of the fundamental principles and practices of life; to help parents get a different outlook as regards their duties to their children; and thereby to help educate the children to create for themselves a place in a changing world?

Abstract of Discussion

A Doctor: This is a wonderfully timely paper, and the speaker has taken a much broader view than most of us. One point that should be stressed, it seems to me, is that there will have to be a good deal of parental education. The program which Dr. Shaw has presented is a very inspiring one that is needed for this time, and one which should be studied and put into practice. As Dr. Shaw says, we are facing the end of the world we have known. We are going to have to adapt ourselves to the new conditions. I want to thank the speaker.

Dr. W. E. Keiter (Kinston): I suggest that we have plenty of copies of Dr. Shaw's address printed so that we can give them to the parents of our patients.

ACUTE GLOMERULONEPHRITIS WITH SPECIAL REFERENCE TO TREATMENT

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In 1836, Richard Bright wrote of acute glomerulonephritis: "This is, indeed, an humiliating confession, that, although much attention has been directed to this disease for nearly ten years—yet little or nothing has been done towards devising a method of permanent relief, when the disease has been confirmed; and no fixed plan has been laid down, as affording a tolerable certainty of cure in the more recent cases." This statement of Bright's is almost as true today as it was in his day. I shall not attempt to present any classification of Bright's disease except to quote Addis, who says that "every student of Bright's disease constructs his own classification to meet his own individual interests and needs."⁽¹⁾

In order to understand something about the difficulty in treating nephritis, it is imperative that one know something of the anatomy, physiology and pathology of the kidney. I shall not attempt to explain any of these in detail, but in order to refresh your memory, I shall review them briefly.

The kidney is made up of possibly a million units, each of which is called a nephron; each nephron is composed of a malpighian body and a uriniferous tubule which extends from its beginning in the malpighian body to the collecting tubule. The malpighian body consists of a glomerulus and a covering membrane called Bowman's capsule. Into this capsule enters an afferent vessel which immediately divides into four or five branches; each of these branches subdivides and forms a series of capillary loops which anastomose with one another, and reunite to form a smaller, efferent vessel. This leaves the glomerulus to break up into a plexus of capillaries over the neighboring tubules. Bowman's capsule is composed of a parietal and a visceral layer. The parietal layer covers the inner side of the capsule; the visceral layer, the capillary groups. The capsule itself is a continuation of the uriniferous tubule. The convoluted tubule is lined by low columnar epithelial cells, or pyramidal cells. The uriniferous tubule is continuous with the collecting tubule.

The first theory of urine formation was evolved by Ludwig, and was called the "filtration-reabsorption theory". Some time after this Heidenhain evolved what was called the "secretory theory". Within recent years Cushny revived the "filtration-reabsorption theory" and called it the "modern theory", but it remained for Richards and his associates, working at the University of Pennsylvania, to prove that Ludwig's idea of the "filtration-reabsorption theory" was the correct one, and that he was entirely right in assuming that the pressure in the capillaries of Bowman's capsule is higher than capillary pressure elsewhere in the body. This work was done on the kidneys of animals. With the use of delicate instruments, they measured the pressure in the capillaries and examined the contents of the glomerular capillaries by micro methods. It was found that this material was free of albumin and high in salt content, and that it showed sugar. Of course, the fact that the urine does not show sugar is evidence that some absorptive process has taken place between the glomerulus and the urinary bladder. Bieter and Hirschfelder, using the methods of Richards, experimented with phenolsulfonphthalein and with sodium sulfindigotate. They showed that the phthalein in the tubules was darker and more concen-

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1. Loeb, Robert F., in Cecil's Textbook of Medicine, ed. 4, Philadelphia, W. B. Saunders, 1938, p. 935.

trated than that in the glomeruli. This concentration, they concluded, was due to reabsorption⁽²⁾.

Any discussion of pathology must, of necessity, be somewhat detailed. In the first stage of glomerulonephritis the endothelial cells lining the glomerular tuft become swollen and thus cut down the caliber of the vessels. This, in turn, causes an avascularization of the glomerulus. The injury makes the vessel wall more permeable, and red blood cells escape into the capsular spaces and appear in the urine. This process extends to include the reflected epithelial-covering cells of the tuft, and as a result of necrosis and degeneration of these cells, much cellular debris is noted in the capsular spaces. This material may become adherent and form casts which appear in the urine. The increased permeability of the vascular wall allows albumin to pass between the endothelial cells, and this, too, appears in the urine. Soon thereafter inflammatory cells with polynuclears accumulate in the capillaries and migrate into the interstitial spaces of the tuft.

Histologically, there is a markedly increased cellularity; hemorrhage becomes more and more prominent, and fibrin precipitates out of the material which passes through the damaged glomerular filter. This appears as a layer over the surface of Bowman's capsule, frequently obliterating the orifice of the tubule. These masses of exudate and cellular hyperplasia are spoken of as epithelial crescents. As a result of the acute inflammatory changes in the glomerulus the corresponding tubule undergoes secondary degenerative changes with swelling of the cytoplasm of the cells, especially in the convoluted part. These degenerative changes are striking, and aid in the development of hyaline and granular casts. This process has been described as diffuse; however, as Richards has shown, the glomeruli do not all function simultaneously, and as a result of this some of the glomeruli escape extensive damage, and for this reason the kidney is able to carry on moderate renal function. Grossly, this picture represents the picture which was described to us as "the large red kidney" of older terminology.

The etiology of nephritis remains obscure. The fact that nephritis follows so consistently some infectious process has definitely es-

tablished that there is some relation between nephritis and certain types of infection. Tonsillitis, pharyngitis, sinusitis, the common cold, peritonsillar abscess, and scarlet fever are frequent precursors of nephritis. The students of this disease have gone even farther, and have named the hemolytic streptococcus as the most frequent offender, though nephritis may follow pneumococcal infection, gram-negative coccal infection, pyogenic infection, and enteric fevers. At times, though, no apparent infection is found.

Longcope⁽³⁾ has noted that the skin of a large proportion of patients suffering from acute and subacute glomerulonephritis is much more sensitive than the normal skin to culture filtrates of hemolytic streptococcus of the B type. He also has found that the serum of these patients will agglutinate killed cultures of a limited number of strains of hemolytic streptococcus. A most interesting point is that there is often a delay of several days following the primary infection before the nephritis is noted, and it is because of this delay that much study and much conjecture have been made in recent years as to the character of the etiological agent.

Most authors feel that nephritis is caused by an anaphylactoid reaction. As early as 1912 Escherich and Schick brought out the view that glomerulonephritis was not induced by infection *per se*, but by the immune reactions resulting from the infection. Friedemann, Longcope and others since then have come to a similar conclusion. Loeb⁽⁴⁾ says that we can hypothesize that an infectious agent such as the hemolytic streptococcus produces within susceptible individuals nephrotoxic immune bodies. These in turn may give rise to acute or chronic glomerulonephritis.

McLeod and Finney, using killed cultures of hemolytic streptococcus of the B type, injected the left renal arteries of a series of normal rabbits, and of a series of rabbits which had been sensitized to hemolytic streptococcus type B. Diffuse glomerulitis occurred in only 27.5 per cent of the normal rabbits subjected to intra-arterial injections of hemolytic streptococci, but in 73.9 per cent of the sensitized rabbits. Therefore, they concluded that "sensitization" or infec-

3. Longcope, W. T., et al.: *The Kidney in Health and Disease*, Philadelphia, Lea and Febiger, 1935, p. 330.
4. Loeb, Robert F., in *Cecil's Textbook of Medicine*, ed. 4, Philadelphia, W. B. Saunders, 1938, p. 939.

2. Elwyn, Herman, in *The Cyclopedia of Medicine, Surgery, and Specialties*, Philadelphia, F. A. Davis Co., 1938, p. 416.

tion of the animal rendered the kidney in some way particularly susceptible to the action of the dead hemolytic streptococci which were brought in direct contact with the glomerular capillaries⁽⁵⁾.

McCann⁽⁶⁾ says that the work of Kay, in which he caused experimental nephritis by the injection of nephrotoxic duck serum, is interesting. Kay found that experimental nephritis developed more quickly after injection of nephrotoxic duck serum in rabbits which had previously received injections of normal duck serum. This probably explains the short latent period of the exacerbation of chronic glomerulonephritis as compared with the relatively long latent period of the initial attack.

Schwentker and Comploier⁽⁷⁾ showed in their experiments that complement-fixing antibodies could be demonstrated in the blood of persons suffering from a streptococcal infection such as scarlet fever. These experimental data, of course, are of more academic than practical interest. However, this may explain why these chronic cases go on in a progressive way with no evidence of an infectious process.

Fishberg⁽⁸⁾ says that true bacterial invasion of the kidney from the primary focus by way of the blood stream is highly improbable, for true glomerulonephritis is very rare in puerperal and other forms of sepsis. He also says that numerous investigators have shown that the blood and urine are almost always sterile in patients with acute glomerulonephritis. He concludes that the renal process is probably the result of an injury by a toxic substance, and adds that the diffuse nature of the glomerular injury also speaks in favor of a toxic process. In further comment on the anaphylactoid theory, he says that a conceivable hypothesis would be that when the antibodies are formed in sufficient concentration, their interaction with the antigen results in a substance which injures the capillaries and affects the glomerular capillaries, because of their special excretory function, to a far greater extent than any of the others.

In leaving this anaphylactoid theory, it would seem proper to describe a mechanical

theory evolved by Volhard, and elaborated in Fishberg's book: "Volhard advanced an ingenious and novel explanation of the pathogenesis of acute glomerulonephritis. He believes that the glomerular ischemia is due to a block of the circulation before the terminal portions of the vasa afferentia. He holds that the circulatory obstruction is functional, consisting of a spasm of the smaller arteries. He regards the glomerular lesions as an expression of the reaction to the resulting ischemia. He further believes that the arteriolar spasm is not confined to the kidney but is universal and thereby accounts for the hypertension, retinal lesions when present, and the pallor of the skin. He even accounts for the edema by ischemic injury to the capillaries." Fishberg does not agree with this theory. He says that the capillaries are not empty and that their lumina are obliterated by swelling and proliferation of the endothelial cells and other inflammatory exudation.

No discussion in this group regarding experimental work would be complete without mentioning the work which Dr. W. deB. MacNider has done on cell resistance in the kidney. While his work was done with toxic metal, he has definitely shown that the kidney is able to replace the destroyed cells with cells which are very resistant to the offending poison. It makes one wonder if the same resistance could not be built up to bacterial poison.

I plan to outline a form of treatment described by Volhard, but I think it would be well to discuss first some of the symptoms to be treated. This will better prepare us for the rationale of the treatment procedure. There are two main problems involved in the treatment of acute glomerulonephritis. The first is to protect your patient from the dangers of the first stage; the second is to prevent the patient from going into the chronic stage. According to Volhard⁽⁹⁾, it is important to realize that there is a general vascular constriction which affects not only the blood vessels of the kidneys but the blood vessels all over the body. This naturally causes a hypertension, and puts additional work on the heart. In most of these cases, there is some dilatation of the heart, venous congestion, increase in the size of the liver, and often marked dyspnea. At first the pulse has a tendency to be slow, but any rate over

5. McLeod and Finney, in *The Kidney in Health and Disease*, Philadelphia, Lea and Febiger, 1935, p. 332.

6. McCann, W. S.: *Bright's Disease: A Review of Recent Literature*, Arch. Int. Med., 67:680 (March) 1941.

7. Schwentker, F. F., and Comploier, E. C.: *Production of Kidney Antibodies by Injection of Homologous Kidney Plus Bacterial Toxins*, J. Exper. Med., 70:223 (September) 1939.

8. Fishberg, Arthur M.: *Hypertension and Nephritis*, ed. 3, Philadelphia, Lea and Febiger, 1934, p. 387.

9. Volhard, Franz: *The Kidney in Health and Disease*, Philadelphia, Lea and Febiger, 1935, p. 659.

80 should be considered with alarm. As soon as the heart rate begins to go above 50 or 60, the heart should be protected. The patient should be kept strictly in bed. It may be necessary to do a venesection, and if there is any sign of decompensation, digitalis should be used. The second danger from which the patient has to be protected is cerebral edema. The signs of this condition are, of course, headache, vomiting, apathy, somnolence, and loss of vision. The higher the blood pressure, the more danger to the brain. This danger, too, is lessened by venesection, catharsis, and by diet. Intravenous magnesium sulfate is also of benefit. The third danger is that of renal insufficiency. If anuria is present, the patient will get an accumulation of nitrogenous products and uremia. This condition does not often occur, because the kidney usually continues to excrete concentrated urine. In protecting the heart, brain and kidneys in the acute stages, Volhard uses what he calls the hunger and thirst treatment. I wish to say that I have had occasion to use this treatment on four patients at Watts Hospital in Durham, North Carolina. Later on in this paper, I plan to present these cases very briefly.

This form of treatment is not without criticism. Fishberg⁽¹⁰⁾ makes the following statement about Volhard's treatment: "The method has been extensively discussed in the German literature but almost all of the authors have failed to see any good results, and Rosenberg points out that it may incite convulsive seizure. I have had no experience with the method. The theoretical foundation seems very dubious, for the spasm of the preglomerular arterioles is not proven, and there is risk of elevating the blood pressure with resultant strain on the heart."

I will say in defense of Volhard, that we have run into no trouble with this form of treatment. Volhard⁽¹¹⁾ says: "To accelerate the circulation in the glomeruli without operation and to open the closed vessels of the kidney, I have used the 'Wasserstoss' in getting over the danger of high blood pressure in the form of a water trial." The treatment may be outlined as follows: After a diagnosis of acute glomerulonephritis has been made, the patient is put on an absolute fast-

ing, dry regimen. The fasting and thirsting period lasts from three to five days. The patient should be weighed daily. The blood pressure should be taken daily. If the patient is a child and complains too bitterly, he may be allowed to suck an orange, or have small amounts of ice from time to time. If the edema of the legs is marked, Volhard recommends elevating them. At the end of the three to five day period, the patient is given, early in the morning, 1500 cc. of weak tea, which is supposed to be taken within a half to three-quarters of an hour. Volhard calls this the 'Wasserstoss'. Following the administration of the weak tea, very marked diuresis is noted at times. If this does not occur, then the dry, thirsting treatment may be repeated. Occasionally during the fasting and thirsting period, the patient may lose a great deal of fluid. In this case, it is well to give fluids on the evening before the Wasserstoss, especially if the urine is very concentrated. If this is not done, the dry tissue will likely take up a lot of the fluid which is given in the tea. In a patient with moderate edema, Volhard recommends giving $\frac{1}{2}$ to 1 Gm. of sodium theophylline in the 1500 cc. of weak tea. Once the diuresis is started, and, as Volhard thinks, the closed glomeruli have been opened, then masses of nitrate and sodium chloride will be swept out of the kidney. He says that occasionally, because of extra-renal reasons, one is not able to get rid of the endogenous water supply. Then he advocates adding to the fasting, food which is poor in nitrate, in sodium chloride, and in liquids. In addition to this regimen, he uses a hot air apparatus, hot packs, or a prolonged, hot bath. After several days of this regimen, he repeats the Wasserstoss, and from then on he gives sweating and the Wasserstoss on alternate days until a diuresis is reached. He puts off the radical measures, such as decapsulation. The symptoms of improvement are lowering of the urea of the blood, with slow dropping of the blood pressure and increasing diuresis. The occasional interspersed water trial will give a very good indication of the amount of improvement in the glomerular function. In the very refractory cases, it is possible that headache and eclamptic equivalents may occur, usually at the time of the water trial. These cases should be watched very closely. Volhard says that the only way to be sure that the glomerular vessels have been opened

10. Fishberg, Arthur M.: Hypertension and Nephritis, ed. 3. Philadelphia, Lea and Febiger, 1934, p. 423.

11. Volhard, Franz, in Mohr, L., and Staehelin, R.: Handbuch der Inneren Medizin, ed. 2, Berlin, Julius Springer, 1931, vol. 6, p. 1325.

is by a careful checking of the blood pressure. The blood pressure often decreases during the preparatory fasting, and may drop down to normal quickly, or it may come down gradually, after the kidneys have responded to the water trial. The hypertension may recur, and if it does, the fasting and Wasserstoss should be repeated. The later the treatment is started in the disease, the longer it will take to get the diuresis and to get the blood pressure down. The blood pressure curve, and the estimation of the body weight will give a better estimate of the disease than the albumin and sedimentation of the urine.

Case Reports

Case 1. M. A. D., a 30 year old white male, was admitted to Watts Hospital on December 30, 1939, with a chief complaint of headache and swelling of the face and legs of one week's duration. The tonsils had been removed six months prior to admission. He said that he had sore throat at times, and had had some respiratory infection recently. His blood pressure on admission was 190 systolic, 90 diastolic. The throat was very red; there were large pieces of tonsil in both fossae. The heart was definitely enlarged to the left; the rate was 96. There was a loud systolic murmur in the pulmonic area. Liver dullness was noted below the right rib margin, and there was slight lumbar tenderness. There was definite puffiness about the face and eyes, and slight puffiness of the hands. There was no edema of the feet and ankles at the time of examination. The clinical impression was acute pharyngitis, infected tonsillar tags, acute sinusitis of the right antrum, acute glomerulonephritis. A urinalysis on December 31 showed a specific gravity of 1.020, an alkaline reaction, a light cloud of albumin, no sugar, a few hyaline and granular casts, many leukocytes, and many erythrocytes. Blood chemistry on January 1, 1940, showed a urea nitrogen of 22 mg., and a blood urea of 46 mg. On January 30 the urea nitrogen was 10 mg. and the blood urea 21.4 mg. A urine culture on January 1 showed mixed bacteria. The plasma proteins were normal, with a total of 7. A blood count on December 31, 1939, showed a hemoglobin of 82 per cent, 4,140,000 red blood cells, and 14,500 white blood cells. The highest sedimentation rate was on January 2, and was 27 mm. in 60 minutes. On January 31 the sedimentation rate was 15 mm.

in 60 minutes. The phenolsulfonphthalein test on January 31 showed an elimination of 56 per cent in the first hour.

The patient was put on Volhard's regimen on December 31, 1939. His blood pressure was checked daily. The weight was checked on January 1, 1940. On January 3, 1940, the patient was given 1500 cc. of weak tea before breakfast. On January 4 he was allowed to have fluids freely. On January 5 he was put back on a dry diet with about 600 cc. of fluids daily. On January 9 he was again given 1500 cc. of weak tea, and 7.5 grains of caffeine sodium benzoate after he had finished the tea. Magnesium sulfate in half-ounce doses was used every day. The last blood pressure reading, taken before the patient's discharge from the hospital, was 138 systolic, 80 diastolic. Both antrums were opened while the patient was in the hospital. The last progress notes made by the intern stated that the patient was discharged much improved.

This patient was seen in the office on April 3, 1940, at which time his blood pressure was 115 systolic, 70 diastolic; pulse, 90. No abnormality was noted. The urine at that time showed a specific gravity of 1.016, an acid reaction, no sugar or albumin; the microscopic examination showed 2 or 3 white blood cells per high power field, a few epithelial cells, and no casts. Following this visit to the office, the patient had his pieces of tonsil removed on April 9, 1940. He returned to the office to be checked over on April 30, 1941. The blood pressure at that time was 105 systolic, 70 diastolic; the pulse rate 72. The urine showed a specific gravity of 1.015, no albumin or sugar; an occasional white blood cell was noted in the microscopic examination. The phthalein output was 60 per cent in the first hour, and 10 per cent for the second hour. The patient seemed to be normal in every respect. A heart tracing was reported within normal limits.

Case 2. J. E. H., a 28 year old white male, was admitted to Watts Hospital on November 9, 1940, with a chief complaint of "kidney trouble". One month prior to admission he had had a severe cold. Following this he developed sinus infection and sore throat. Two weeks prior to admission he noted puffiness about the face and eyes, and developed rather marked edema of the lower extremities. He also noticed edema of the scrotum. He was told a week prior to admission that he had kidney trouble.

On admission his blood pressure was 150 systolic, 75 diastolic. The nose was stuffy. The tonsils were badly diseased and enlarged. There was some posterior cervical adenopathy. The heart was definitely enlarged to the left; the rate was 72, and there was a loud systolic murmur at the pulmonic area transmitted down the left sternal border. There was slight edema of the abdominal wall. Liver dullness was noted two inches below the right rib margin. There was marked edema of the scrotum and marked edema of the lower extremities. The clinical impression was diseased tonsils, and acute glomerulonephritis with edema. The electrocardiographic tracing was within normal limits. The sedimentation rate was 26 mm. in 60 minutes on November 10, 1940. X-ray of the sinuses showed a clouding of both antrums. A urinalysis on November 10 showed a specific gravity of 1.016, an acid reaction, a cloud of albumin, and no sugar. There were many granular and hyaline casts, 100-125 white blood cells, and 100-125 red blood cells per high power field. A blood count on the same day showed a hemoglobin of 80 per cent, 4,450,000 red blood cells, and 8,600 white blood cells, with 71 per cent polymorphonuclears, 28 per cent lymphocytes, and 1 per cent monocytes. The urea nitrogen on November 10 was 27.8 mg., and the blood urea 59.3 mg. A culture from the throat showed hemolytic streptococcus. The blood protein was normal on November 16. On December 5 his phenolsulfonphthalein elimination test was 41.6 per cent the first hour and 12 per cent the second hour—a total of 53.6 per cent elimination.

The patient was put on Volhard's regimen, and was given epsom salts on November 9. On November 13 he was given 1500 cc. of weak tea. The blood pressure on November 15 was 165 systolic, 90 diastolic, and on November 20 was 120 systolic, 80 diastolic. The patient was much improved and was discharged on December 5. This patient was seen by me through the courtesy of Dr. R. E. Nichols, Jr.

Case 3. D. A. G., a 30 year old white male, was in Watts Hospital from March 23, 1940 to April 4, 1940, with a diagnosis of peritonsillar abscess and secondary anemia. He was readmitted on April 8, 1940, with an acute nephritis. His blood pressure when he was in the hospital first was 134 systolic, 80 diastolic; when he was readmitted, his

blood pressure was 160 systolic, 100 diastolic. There was pitting edema of the extremities with marked pallor of the skin and puffiness of the face. The medical resident noted that he had a gallop rhythm of his heart. There was a recurrence of his peritonsillar abscess. The predominating organism was the hemolytic staphylococcus.

On April 10, he was put on Volhard's regimen. I shall not record the laboratory findings, except to give one urinalysis on April 10, which showed a specific gravity of 1.012, an acid reaction, a cloud of albumin, no sugar, a few waxy casts, a few hyaline and granular casts, many leukocytes, and many erythrocytes. The Wasserstoss was administered three days later. On April 14, he was put on a salt-free diet, containing 60 Gm. of protein, and high in carbohydrates; fluids by mouth were limited to 900 cc. daily. Two hundred and fifty cubic centimeters of 25 per cent glucose were given intravenously twice daily. The patient's tonsils were removed on April 25, 1940. The intern's notes say that the patient was discharged on May 4, 1940, in good condition. This patient got rid of his edema, but I understand that he has not done so well since he left the hospital. He was given a cystoscopic examination on April 19 by Dr. William Coppridge, who made the diagnosis of bilateral staphylococcal pyelonephritis. As will be noticed, this patient did not present a typical glomerulonephritis, but he did respond to Volhard's treatment though the regimen was not carried out as strictly as in the other cases. This case was also seen by me through Dr. R. E. Nichols' courtesy.

Case 4. The last case I am presenting was not an acute glomerulonephritis, yet the patient responded very well to Volhard's regimen.

L. T. F., a 40 year old white male, was admitted to Watts Hospital with a history of having shown white blood cells and red blood cells in the urine for quite a long period. There was an old hospital record of January, 1930, which showed that he had a few pus cells and red blood cells in his urine. Clinically this probably should be classed as another case of pyelonephritis. He showed very few casts in his urine at any time, but did show many pus cells and red blood cells. The admission diagnosis was a subacute exacerbation of an old nephritis. He was put on Volhard's regimen, and the

edema disappeared. However, he developed a very sore throat, and an acute exacerbation of his nephritis. His urea nitrogen, which had dropped from an admission figure of 41 mg. to 32 mg., went up to 116 mg. There was no appreciable delay between the pharyngitis and the flare-up of nephritis.

Conclusion

In conclusion, I wish to stress the importance of early and adequate treatment for these cases of acute glomerulonephritis, for every day that a patient walks about with this condition renders the prognosis darker and diminishes the chances of complete and ultimate recovery. All of Volhard's patients who came into his clinic in the first weeks of the disease recovered completely. I would not leave you with the idea that I think Volhard's treatment is the only treatment for acute glomerulonephritis; I have used other forms of treatment with success, and I am sure that you have. But I do think all of us should know of this form of treatment, because most of us, I am sure, have been guilty at times of overloading the patient with fluids when he was already "waterlogged".

Abstract of Discussion

Dr. Wm. deB. MacNider (Chapel Hill): I suppose the only way we gather understanding is through a meticulous process of research, and by such a process we focus our minds and our observations on certain specific and meticulous parts of the organ or of an individual, and forget to see the organ or the individual as a whole. That perhaps is the process that we have participated in in our study both of experimental nephritis and of nephritis as it occurs clinically.

It has always struck me as being rather foolish in acute glomerulonephritis, in which Dr. Stanford indicated there was inability of the kidney to move water from the tissues, to persist in attempting to force water into those tissues on the assumption that we can dilute some toxin and that a diuresis will finally develop. The kidney is a structure made up of epithelial tissue, a tissue which can easily swell, and of vascular tissue in the form of glomeruli which furnish blood to the glomerulus and to the epithelium. The combined action of the two forms urine. The kidney is not like the liver, which can swell tremendously and still function, but these two types of tissue in the organ, vascular and epithelial, for physiological purposes, are confined in a fibrous substance which does not permit excessive swelling. When fluid accumulates in the connective tissues, it occurs also in the liver tissue and the kidney tissues, and in the kidney tissue it can not dissipate itself. The result, whether the injury is primarily vascular or primarily epithelial, is that you get secondary swelling of the epithelium which interferes with the circulation through the kidney. The kidney can not function effectively until an adequate amount of blood is exposed to it, from which it can

remove that product designated as urine. I suppose that when an individual with acute glomerulonephritis is starved and fluid is withheld, some of the swelling in the connective tissue tends to subside. When it subsides it permits the influx of more blood. It permits not only an opening for glomeruli to function, but exposes more blood to the action of the epithelial part of the nephron. Likely that is what happens.

After that process has started, but not before—and I should think, Dr. Stanford, that that is where we might get in trouble with it—after that process is started, then it strikes me as quite logical to introduce fluids, and considerable amounts of fluids, by mouth, for various reasons. In the first place, with the absorption of more fluid in the blood, there is more fluid to be removed by the kidneys. Second, the viscosity of the blood is decreased, which accelerates the flow of blood through the kidney—a very important factor. Third, with an increased amount of fluid in the blood, there is bound to be some elevation in pressure, transitorily, but when the glomeruli are opened a little by that pressure, fluid is removed from the blood and enters the tissue. This not only removes the fluid as urine but also removes chemical products which are responsible in part for the real elevation of pressure.

It seems to me that the plan which Volhard has suggested and which has been emphasized by Dr. Stanford is rather logical. You withhold fluid for a bit until the edema tends to subside. I assume that. After it has subsided so that circulation in a natural fashion has begun to be established through the kidney, then you can Wasserstoss the kidney. The caffeine in the tea accelerates the flow of blood through the kidney and favors adequate output.

I enjoyed Dr. Stanford's paper and think it is a suggestive piece of work and a most useful message.

Dr. Stanford: I want to thank Dr. MacNider for his very instructive discussion. I do not believe as Volhard does that the difficulty in the glomeruli is due entirely to the arteriolar spasm, because the pathology of the kidney refutes this theory; however, there is undoubtedly some spasm of the arterioles. I believe that the main benefit of the Volhard treatment is due to a concentration of the blood in the vessels, and this causes a flow of the fluids from the tissues into the blood vessels, and as Dr. MacNider has suggested, it begins to relieve the pressure in the kidney caused by the edema. I want to leave you with this warning: Patients undergoing this treatment should be watched very carefully. I refer especially to their circulation (heart, brain and blood pressure), their blood chemistry and their weight.

The Indication for Gross Iron Therapy.—Under normal circumstances the body is able to replenish a depleted iron store from dietary sources alone but at a relatively slow rate. Approximately 25 milligrams of absorbed iron is required to synthesize enough hemoglobin to raise the level one per cent. When one considers that only about 5 milligrams daily are absorbed from an adequate food intake, simple calculation would indicate that some fifty days would elapse before a rise of ten per cent in hemoglobin level could be expected. When by common experience this absorption rate is accelerated ten or fifteen times by the addition of an excess of inorganic iron to the diet, the indication for gross iron therapy becomes obvious.—Philip F. Eckman, M.D.: *Indications for Use of Iron in Treatment of the Anemias*, Minnesota Medicine, 23:714 (October) 1940.

THE CARE OF PATIENTS WITH INCURABLE CANCER OF THE CERVIX

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It is a discouraging fact that in spite of extensive publicity propaganda about cancer, improved methods of diagnosis, and surgical and radiation treatment, we are, as yet, able to obtain no better than an average of 32 per cent five-year survival rate in unselected cases of cancer of the cervix. This average is based on reports by the International Cancer Committee after analysis of reports from sixteen leading clinics throughout the world. The five-year cure rate varies from 100 per cent in early stage 1 cancer of the cervix to a 0 per cent rate in the late stage 4 group.

This means that sooner or later 70 per cent of the uterine carcinomas come to the stage where further active treatment in the hope of curing the disease is futile.

This unfortunate group of patients deserve the best care the medical profession has to offer. Too often, they are neglected and left to their own resources to obtain relief from pain. Many are driven into the hands of the quack, who quickly exhausts their financial resources.

In some states special institutions are maintained for the care of the incurable cancer victim. Unfortunately, we do not have such facilities in North Carolina. We can, however, do much to make the slow process of dying in this group of patients less painful.

The following simple treatment procedures, easily carried out by anyone trained in the practice of medicine, have been found of great value:

First: The correct diagnosis and appraisal of the incurability and hopeless nature of the disease must be made. I place this first for obvious reasons. Certainly no patient for whom there is the slightest chance of a cure should be refused active treatment. However, patients are frequently sent great distances with the hope that radiation treatment will cure them. On their arrival at the designated clinic, it is found that radium and x-ray can do no good. My experience is

that attempts at radiation in the far advanced cases may do harm and increase the patient's discomfort. Correct evaluation of such a patient's disease would save the discomfort of a tedious and painful journey and much disappointment.

Second: Since it is an established fact that most patients with cancers of the uterus do not die of the cancer *per se*, but from ureteral obstruction, anuria, and uremia, it is necessary to have complete knowledge of the urinary tract. This is best obtained by intravenous urograms. If obstructive uropathy is found, a catheter in the ureter will do much toward relieving the pain in the back and pelvis, reducing the toxemia and prolonging life.

Third: In many cases pyometra is found to be present as a result of obstruction in the cervical canal from the growth itself, or from stenosis of the canal which sometimes follows radium treatment. For this condition, gentle dilatation of the cervix and lavage of the uterine cavity with saline through a soft rubber tube is indicated.

Fourth: Parametric abscesses frequently develop in uterine cancer because of the associated infection found in almost all cases. If this is present, prompt colpotomy should be done.

Fifth: Cases with bladder wall involvement and associated cystitis, with its many distressing urinary symptoms, can frequently be relieved by irrigations of the bladder and the use of an indwelling catheter.

Sixth: For painful metastatic lesions to the bones, high voltage roentgen therapy is of most value as a palliative procedure.

Seventh: When the final stage of drug therapy is reached, it is best to begin with aspirin to which may later be added codeine. When this no longer gives relief, it is worth while, before starting the patient on morphine, to try cobra venom⁽¹⁾. This should be started with 0.5 cc. intramuscularly the first day and 1 cc. daily thereafter for a week to ten days. In many cases prompt and prolonged relief is obtained. In cases which are not relieved, it then becomes necessary to resort to the use of opiates. A convenient method of administering morphine is in the form of Schlesinger's solution⁽²⁾, starting with ten drop doses daily, which may be in-

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1. Hodes and Thorner: Relief of Pain in Cancer, Am. J. Roentgenol. 46:84, June, 1941.

2. Eric Liljencrantz: Cancer Handbook, Stanford University Press, p. 77.

creased as needed. The formula of this solution is as follows:

Hyoscine hydrobromide	0.025
Ethyl morphine hydrochloride	4.0
Morphine sulfate	2.0
Aqua distillata	100.0

Eighth: In cases in which the above methods fail to give relief, the careful injection of alcohol in the subarachnoid spinal space is a valuable procedure which often gives permanent and lasting relief. For visceral pelvic pain, presacral neurectomy is of value in some cases.

Ninth: For proctitis, diarrhea, and rectal tenesmus, a liquid diet and tincture of opium in 30 drop doses three times a day should be tried.

Tenth: For patients with severe infections, chills, and fever, the use of the sulfonamides, blood transfusions, intravenous fluids, with frequent hot boric acid douches will do much toward relieving the associated toxemia. To the douche solution, the addition of aromatic chlorazene powder, one tablespoon to the quart, is of definite value in reducing the fetid odor of the uterine discharge.

Eleventh: For the control of severe and alarming hemorrhages, which are rarely fatal, a vaginal tamponade with gauze soaked in vaseline, and the careful application of acetone to the vaginal vault is usually all that is necessary.

Twelfth: For the ileus frequently present in the late stages of cancer, low residue diet, liquid petrolatum, and enemas are indicated. Operative interference is definitely contraindicated at this late stage.

Beyond the above procedures we have little left in our therapeutic armamentarium, except careful nursing, wholesome diet, and kindness and sympathy both for the patient and her loved ones.

Evolution.—Whether science and the scientific method, whether understanding, honesty, reason and justice can contrive survival values equal, if not superior to the blind forces of nature which shaped man's past, is as yet in the laps of the gods. Still, we can not deny the possibility, and we will nurse the hope that the hairy ape who somehow lost his tail, grew a brain worth having, built speech and song out of a hiss and a roar, and stepped out of the cave to explore and master the universe, may some day conquer his own irrational and myopic behavior towards his kin.—A. J. Carlson: *Science Versus Life*, Science, 93:99 (January 31) 1941.

THE MANAGEMENT OF CONGESTIVE HEART FAILURE

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In this discussion of the management of congestive heart failure nothing new is presented, but an effort is made to outline the practical handling of these cases when and where they are found. For obvious reasons some of the laboratory procedures have been omitted or merely mentioned and, as far as possible, the procedures presented will be those which can be carried out in the home without the aid of elaborate laboratory equipment. Much can be done for patients with congestive heart failure, not only toward relieving them of their extreme discomfort but toward restoring them to a life of comparative ease and usefulness.

Unlike acute infectious diseases or surgical conditions in which a complete cure is to be expected, the treatment of congestive heart failure is concerned with the amelioration of symptoms. Its purpose is to diminish suffering, to prolong life, and to increase the usefulness of the patient for as long as possible. When congestive failure occurs the heart has already been damaged beyond repair, but with careful treatment the patient can sometimes be restored to a useful if limited occupation.

One must take into consideration the economic and social status of the patient: whether the man's job will be jeopardized by four to six weeks spent in bed, whether he has sickness insurance, and other purely non-medical factors.

In the moderately advanced cases careful history taking and examination will reveal increasing dyspnea, some cough, moderate pitting of the ankles, a slightly engorged and tender liver which can be palpated below the costal margin, and a few rales at the bases of the lungs. The heart will be slightly dilated and the rhythm may be irregularly irregular, indicating auricular fibrillation.

The blood pressure findings will be determined by the previous condition of the patient. A Wassermann test and urinalysis should be done, and if possible, a blood non-protein nitrogen and creatinine determination should be obtained. A phthalein test or

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urinary concentration test will aid in determining the functional activity of the kidneys.

Complete rest in bed is the first and most important part of the treatment. A frank discussion with the patient regarding his condition and the measures which will best control it will aid in getting him off to a good start. Most patients raise strenuous objections to remaining away from work for a sufficient time to carry out a satisfactory treatment, and want to compromise by agreeing to give up part of their work and "take it easy" for a while. Others, when they feel better, after a few days rest, want to shorten the length of stay in bed and return to limited activities before the heart has had time to store up sufficient reserve to permit this. When it is explained that the heart, unlike an injured limb, cannot be stopped and put at absolute rest, but that when the body is put at rest in a horizontal position 25,000 heart beats per day will be saved and the load on the heart lessened most patients will see the necessity of carrying out the treatment as outlined. They should be assured that going to bed does not necessarily mean that they are in a grave condition, but that it is a means of preventing such a condition. In those cases in which the condition is not too serious the beginning of treatment may be postponed a few days to allow the patients time to arrange any matters which might prevent their getting a complete mental and physical rest.

Care should be taken to see that everything at home is conducive to complete relaxation and rest. When possible, a room should be selected which is bright and cheerful, but quiet, and where interruptions are least apt to occur. The bed should be comfortable and plenty of pillows available to be used as a backrest and support for the forearms and knees. Most patients object to the bed pan, and in these cases a commode at the side of the bed can be safely used, unless their condition is too serious. Visitors should be restricted in the beginning, although light reading and the radio may be permitted.

Many patients with congestive heart failure have nocturnal dyspnea and spend restless and sleepless nights which add to their already heavy burden. In morphine and dilaudid we have at our command drugs which will prevent this. Their judicious use hypodermically will add to the patient's comfort

and shorten the period of treatment. Usually after a few nights the relief will be such that bromides or phenobarbital may be substituted with equally good results. At times sedation and rest may improve the circulation to such an extent that digitalis will not be necessary.

The diet is another important part of the treatment. If the patient is overweight, has hypertension, or is very edematous, the Karel diet consisting of 200 cc. of whole milk four times a day, with a little more water or cracked ice for thirst, often produces a feeling of restfulness and relaxation which improves the general condition without any other medication. This diet is easily taken and is low in calories, salt, protein and fluid content. It should be continued for two or three days or longer, depending on the condition of the patient. The semistarvation produces a fall in blood pressure, pulse rate and basal metabolic rate, thereby diminishing the load on the heart and improving the circulation. After this a more general diet containing the proper amount of vitamins is gradually allowed, with restriction of the salt intake and limitation of the fluid intake to 1200 or 1500 cc. a day. A liberal amount of protein is permissible unless there is real evidence of nephritis. It is desirable to keep the weight at or slightly below the normal for the individual, and the caloric intake should be regulated so as to obtain this. No large meals should be allowed, and if necessary four or five small ones should be substituted. Gas forming foods and those which the patient knows he cannot digest should be omitted.

It is desirable for the patient to have a stool every day or two, either naturally or as a result of a mild laxative or enema. If the patient is taking very little solid food a stool every two or three days is sufficient, provided there is no abdominal distention or discomfort. Drastic purgation should be avoided, as it increases the load on the heart and does not have sufficient effect on the edema to warrant its use.

There are some differences of opinion as to the use of tobacco. The ideal would be to omit it entirely, as it is generally believed that it has a vasoconstrictive action on the peripheral arteries. However, the restlessness resulting from its discontinuance is sometimes worse for the patient than any untoward effects a moderate use might have.

If it is allowed the daily supply should not exceed eight cigarettes or two cigars.

Digitalis is probably the most extensively studied drug, yet many questions as to its modes of action remain unanswered. However, it is the most important drug in the treatment of congestive heart failure. Its limitations and indications are still matters of dispute, but its effects are more accurately known. Formerly it was believed that it was contraindicated in aortic valvular disease, in febrile conditions, and in hypertension. Now it is generally accepted that in cardiac failure with hypertension the blood pressure generally falls if the congestion disappears, and that if it does not fall the outlook is less favorable. It is the opinion of most men that digitalis is indicated in any condition associated with congestive heart failure. The best responses from its use are seen in those cases of failure accompanied by an irregular rhythm, but good results are likewise obtained when the cardiac rhythm is regular.

The preparation used will depend to some extent upon the physician's familiarity with the different types and the patient's preference for a pill or liquid. As the drug will probably be used for a long time a preparation which is not expensive should be chosen. The amount of digitalis taken must be accurately known and controlled. Nowadays all preparations offered by reliable pharmaceutical houses are carefully standardized by the manufacturer. The claim that certain specially prepared preparations will not be nauseating is misleading, because any digitalis which is active can produce nausea. The tablet of powdered digitalis is probably the best preparation to use because the dose can be more accurately controlled; however, it is sometimes more nauseating than the tincture. The dosage of the latter cannot be as accurately controlled, because the size of the drop depends upon the size of the dropper, the angle at which the dropper is held and the speed at which the drops fall. If the tincture is used a minim graduate should be obtained so that the amount can be more accurately measured. Most pills of digitalis contain $1\frac{1}{2}$ grains—one cat unit.

For the average patient weighing about 150 pounds it will require about 30 grains of digitalis or 300 minims of tincture of digitalis to digitalize him, though the amount may vary. The rate at which this is given

will depend upon the condition of the patient and the frequency of the physician's visits. If this amount is given within twenty-four hours the possibility of producing toxic manifestations is greater because the amount estimated to be necessary may be more than is required. When the condition of the patient is serious and the full effect is desired in hours rather than days, the intramuscular or intravenous method should be used. The most satisfactory method is to give one fourth of the total dose the first day and a similar amount the second day. One pill five times a day will accomplish this. On the third day the amount may need to be reduced. If the heart rate has slowed (and it is better to count the beats at the apex with the stethoscope rather than at the wrist), one pill three times a day is usually sufficient. This may be reduced to one pill a day after two or three days. The maintenance dose—usually about $1\frac{1}{2}$ grains a day—should then be employed. The heart rate should be kept at about 70, if this can be done without producing ill-effects. If the patient is visited once a day the dosage can usually be well controlled.

The patient should be carefully observed for evidence of digitalis intoxication, of which the most common symptoms are loss of appetite, nausea, vomiting and sometimes diarrhea and yellow vision. The heart rate may be fifty or below, and there are usually extrasystoles or heart block. At the appearance of any of these signs the drug is discontinued. The nausea is of central origin and there is no treatment for it. Should nausea which is not due to intoxication be present, rectal administration of the drug is quite satisfactory. The dose of the tincture which would be given orally should be used, diluted with a small amount of water. If it is given hypodermically about half the oral dose is sufficient. This method is more rapid but cannot be as well controlled.

Quinidine is another drug which may be useful in these cases, though its use sometimes is accompanied by such hazards as sudden death of undetermined origin and emboli. These hazards are greater when mitral stenosis, hypertension or myocardial disease is present. When digitalis does not slow the heart rate or cause a disappearance of arrhythmia, quinidine may prove beneficial. Whenever quinidine is given the patient should be treated in a hospital, where

he can be seen frequently and where electrocardiograms can be taken when needed so that changes in the mechanism of the beat may be more readily followed.

If the edema does not disappear after a reasonable time under treatment the diuretics will be found useful. Of these the most important are the mercurial diuretics, which can be given intravenously or intramuscularly in the gluteal region. If they are given intravenously care should be taken to prevent any of the solution from leaking into the subcutaneous tissues; for it will cause considerable pain and possibly an ulcer. The usual dose is from 0.5 to 2 cc., and may be repeated every week or so as required. The diuretics are more effective when the kidney function is good, but may be employed when the edema persists even if there is moderate damage to the kidneys. When severe anemia is absent and the specific gravity of the urine is high, even when albumin and casts are present, the functional state of the kidneys is probably satisfactory. However, more elaborate laboratory methods may be necessary in some cases to determine this definitely.

The diuretic action of the mercurials will be considerably enhanced by the preliminary administration of ammonium salts, which may have some diuretic action themselves. They should be given in 15 to 30 grain doses four times a day for three or four days preceding the injection of the mercury diuretic. They have a disagreeable taste and may produce nausea, but this can usually be avoided by using the enteric coated pills.

If edema persists in spite of all treatment examination of the blood serum for total protein content should be made, and if this is low a high protein diet or blood transfusion should be given.

Mechanical means of removing large quantities of free fluid in the serous cavities may be necessary at times to expedite recovery.

When the liver is engorged or tender, the veins of the neck distended, and cyanosis and pulmonary edema present, with an elevated blood pressure, a phlebotomy rapidly done may bring about improvement in the patient's condition.

When the time comes for the patient to terminate his bed rest he should be allowed to sit in a chair twice a day for fifteen minutes, gradually increasing the time for

about one week before becoming completely ambulatory. He may be allowed to return to work for a half day in the beginning, but he must never be permitted to take up all his former duties. A routine must be planned which will keep him well within his cardiac reserve. The physician should insist upon a daily rest period in the early afternoon and should have the patient lead a life as free from emotional and physical strains as possible. Much can be accomplished by another full and frank discussion with the patient of his condition and expectations.

TRUE HYPERINSULINISM DUE TO DIFFUSE HYPERPLASIA OF ISLET TISSUE

Report of a Case Cured by Subtotal
Pancreatectomy

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WINSTON-SALEM

True hyperinsulinism has been defined⁽¹⁾ as "a definite disease entity in which the pancreatic isles secrete excessive amounts of insulin resulting in abnormally low blood sugar values and leading to a syndrome characterized by hunger, weakness, tremor, sweating, mental lapses, and at times, unconsciousness." Hyperinsulinism must be differentiated from hypoglycemia, which may be brought about by various other conditions. Wilder⁽²⁾ emphasizes this difference with the statement that "episodes of hypoglycemia do not of themselves establish proof of excessive insulin," and he feels that the term "hyperinsulinism" should be restricted "to those cases in which operation on the pancreas can be expected to effect lasting relief."

It is the purpose of this paper to report a case which meets Wilder's strict criteria and to discuss in some detail the conditions producing a reduction in the blood sugar level, with the subsequent physical, intellectual and emotional disturbances. The case we are reporting is one in which the symptoms of a severe form of hyperinsulinism were completely relieved by subtotal pancreatectomy after a preliminary ligation of

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1. Conklin, Stanley D. and Mervine, Ned. D.: *Hyperinsulinism: A Review*, Guthrie Clinic Bull. 6:205 (April) 1937.
2. Wilder, Russell M.: *Clinical Diabetes Mellitus and Hyperinsulinism*, Philadelphia. W. B. Saunders Company, 1940.

the pancreatica-magna branch of the splenic artery had failed to produce improvement.

Harnapp⁽³⁾ lists the following causes of hypoglycemia: "1. Disturbances of intake: (a) hunger and (b) non-assimilation of glycogen. 2. Overproduction of insulin: (a) primary hyperfunction of the insular apparatus; (b) increased secretory stimulation; and (c) lack of inhibitory stimulation. 3. Deficient formation of blood-sugar-increasing hormones: (a) suprarenals; (b) hypophysis, and (c) thyroid gland. 4. Nervous factors with an unknown effect, such as malformations, tumors or some other injury of the brain." Primary hyperfunction of the insular apparatus may be brought about by two principal causes: (1) an adenoma or carcinoma of the functioning tissue (the islands of Langerhans) of the pancreas, and (2) hypertrophy and hyperplasia of the islet tissue without definite tumor formation. Wilder⁽²⁾ reports that in twelve years at the Mayo Clinic 24 patients with primary insular hyperfunction were operated upon. Of these cases, 12 were found to have either an adenoma or a carcinoma of the pancreas, while an equal number were found to have no tumor. He believed that the latter group had primary hyperfunction of islet tissue. Microscopic proof of this condition is difficult, but in certain cases the over-abundance of islet tissue points rather definitely toward hyperfunction.

Phillips⁽⁴⁾ reports a case in which the patient died in hypoglycemic coma. The autopsy findings were negative except for the presence of abnormally large islands of Langerhans. Measurements of islands were 328 by 242 microns as compared with normal measurements of 157 by 146 microns.

The clinical picture of true hyperinsulinism varies according to the degree of dysfunction. In general it may be said that the characteristics are weakness, hunger, tremor, sweating, and in certain cases mental aberrations and convulsions, developing some time after the ingestion of food, and in many cases relieved completely by the ingestion of carbohydrate food. Mild degrees of the condition are illustrated by the individual who becomes "nervous" and weak when hungry. In the more aggravated cases

the milder symptoms of shock are transitory and are followed in short order by more serious manifestations, such as mental clouding, interruption of consciousness, and convulsions. The literature contains a number of cases in which the mental symptoms of this condition have been confused with those of various primary mental disturbances, and more than one patient with nocturnal convulsions due to hyperinsulinism has been treated for "epilepsy".

Because the symptoms of hyperinsulinism are in some respects similar to those of peptic ulcer, a mistaken diagnosis of ulcer is sometimes made in cases of hyperinsulinism. In both conditions there is epigastric distress noticed some time after eating, and usually relieved by food. Hyperinsulinism is aggravated acutely by any condition, such as an attack of acute gastro-enteritis, which interferes with the intake and assimilation of food. Quite often, in fact, an acute gastrointestinal upset is the factor which leads to the correct diagnosis of pancreatic hyperfunction.

It has been noted that patients who suffer from a mild form of the disease often fall into the use of soft drinks to give relief to their symptoms. These drinks act in two ways to give relief: (1) They supply readily available carbohydrate, and (2) some of them contain caffeine which produces adrenal stimulation, and in turn an elevation of the blood sugar. It has been found that these substances, perhaps by frequent overstimulation of pancreatic function, aggravate, rather than relieve the symptoms of hyperinsulinism. Certain it is that a diet high in carbohydrates is not indicated in this condition. While symptomatic improvement follows the ingestion of carbohydrates there is a subsequent "kick-back", which is harmful. A high fat diet is now regarded by some as most rational. The relatively slow metabolism of fats has the effect of stabilizing the blood sugar and of avoiding excessive stimulation to pancreatic function.

Conn and Newburgh⁽⁵⁾ have pointed out that protein foods are of sound value in the dietary handling of these cases. Protein is converted in the amount of half of its weight into glucose, but the metabolism is slow and unattended by a rapid change in the blood sugar level. In general, it may be stated

3. Harnapp, George Oskar: *Hyperinsulinism*, Deutsche med. Wchnschr. 62:840 (May) 1936.

4. Phillips, A. W.: *Hypoglycemia Associated with Hypertrophy of Islands of Langerhans*, J. A. M. A. 96:1195-1198 (April 11) 1931.

5. Conn, J. W. and Newburgh, L. H.: *The Glycemic Response to Isoglucogenic Quantities of Protein and Carbohydrate*, J. Clin. Investigation, 15:665-671 (November) 1936.

that a diet low in carbohydrate and high in protein and comprising six daily meals is the most rational one.

The diagnosis of true hyperinsulinism is made by a careful consideration of the history and laboratory findings. If the disease is of any considerable duration the patient is likely to be overweight, as a result of attempting to satisfy his insatiable hunger. Corff⁽⁶⁾ states that the diagnoses usually made first in hyperinsulinism are epilepsy, hysteria and insanity. He points out further that if the patient is first seen in coma the most common diagnoses are alcoholism, brain tumor and diabetic coma. Careful consideration of the history, together with laboratory and physical examinations, should make the diagnosis clear.

The laboratory aids to the diagnosis of this condition are practically indispensable. A blood sugar determination made at the time of a hypoglycemic crisis will reveal a level of 60 mg. per 100 cc. of blood or less. Wilder⁽²⁾ feels that the glucose tolerance test is of little value in the diagnosis of hyperinsulinism. He calls attention to the wide variation in the normal response to the ingestion of a large amount of dextrose. The so-called "fast test" is described as the most useful test. This test is based on the fact that regular eating habits are essential to keep a patient with true hyperinsulinism free from symptoms. A fast of six hours is usually sufficient to produce symptoms of hypoglycemia in a patient suffering from true pancreatic overfunction. Greenlee et al⁽⁷⁾ state that two tests have been useful in establishing the diagnosis in a case of hyperinsulinism due to an adenoma of the pancreas. These are (1) the insulin tolerance test, and (2) the response to adrenalin. In the insulin test the patient is given five units of insulin after a twelve hour fast. If there is an adenoma of the islets there is no tendency for the blood sugar to reach normal after two hours. If the administration of adrenalin does not produce a rise in the blood sugar it would point to a diminution of the glycogen reserve as a cause for the hypoglycemia.

In general, it may be said that surgical measures in the treatment of this condition must be considered when the case is so

severe as to be irresponsive to dietary regulation and when extra-pancreatic causes for the condition can be ruled out.

Psychiatric manifestations of this condition are interesting and significant. Amnesia, often of a retrograde type, is frequently associated with the attack. Occasional disturbances of psychomotor activity have been noted, and many patients taken to the emergency wards of psychopathic hospitals because of manic behavior have been found to be suffering from hyperinsulinism. Other psychiatric disturbances have been noted. In cases of so called "nervousness" associated with hunger, this condition should always be suspected.

Report of Case

M. B., a 21 year old white female, was seen first in June, 1937, after she had had a generalized convulsion in the office of a physician who was examining her for entry into the Nurses Training School of the North Carolina Baptist Hospital. She was examined by one of us at this time, but no definite diagnosis of her condition was made. In view of the fact that she did not have an epileptic history and that this attack was the first she had suffered, it was recommended that she be admitted as a probationary student. In October, 1937, she entered the Baptist Hospital as a pupil nurse. In December, 1937, she was admitted to the hospital as a patient, complaining of nausea and vomiting of twenty-four hours' duration. During this time she had been unable to retain anything by mouth. She had a generalized convulsion shortly after admission. She was given intravenous glucose solution and improved rapidly. A glucose tolerance test was performed a few days later, after she had recovered from the gastro-intestinal disturbance. The fasting blood sugar was 65 mg. per 100 cc. Fifty grams of glucose was given intravenously. After one half hour the sugar was 88 mg. per 100 cc., after one hour 74, after two hours 60, and after three hours 58. A diagnosis of hyperinsulinism was made and the patient was advised to take a high fat, low carbohydrate diet, and to eat small meals at frequent intervals.

From this time, December, 1937, until April, 1939, the patient remained in good health and was free of convulsive seizures. On April 4, 1939, she was again admitted to the hospital complaining of nausea and

6. Corff, Meyer: Hyperinsulinism. *Am. J. Surg.* 34:241 (November) 1936.

7. Greenlee, D. P., Lloyd, J. G., Brucken, A. J., and McElroy, W. S.: Adenoma of the Islets of Langerhans, with Hyperinsulinism Associated with Adenoma of the Thyroid, *Ann. Surg.* 3:112 (September) 1910.

vomiting. A general physical examination was essentially negative. The blood picture was about the same as it had been before. The urine showed acetone and diacetic acid on April 7. The blood sugar was 38 mg. per 100 cc. on April 7, and on April 11 was 65 mg. per 100 cc. During her stay in the hospital she was given 500 cc. of 10 per cent glucose solution intravenously on several occasions, and sodium bromide in large doses. The patient improved to the extent that she was discharged on April 11. She was put on a high fat diet, and got along fairly well until May 31, 1939, when she was admitted to the Baptist Hospital complaining of nervousness, irritability, and epigastric pain. She was quite restless and unable to take anything by mouth on account of extreme nausea. This condition had existed for about six or eight hours before admission and had gradually become worse.

A general physical examination was essentially negative. The temperature was 99 F.; pulse 84; blood pressure 115 systolic, 75 diastolic.

On June 6, a stereo-lateral x-ray of the skull gave the following findings: "The sella is normal in outline. The clinoid process is apparently normal. The dorsal sella is slightly thickened and the pituitary fossa shows no erosion." Between May 31 and June 6 the patient was given intravenous glucose (10 per cent) repeatedly, and glucose solution by rectum. However, she showed no improvement, but continued to be very nervous and irritable with frequent muscle spasm of the extremities. Weakness was extreme, and on several occasions she lapsed into coma. Epigastric pain was intense at times.

Between May 31 and June 8 the blood sugar level ranged between 36 mg. and 58 mg. per 100 cc.

Operation was advised, as it was believed that an adenoma of the pancreas might be present. On June 9, 1939, under cyclopropane-ether anesthesia, a left paracostal incision was made and the lesser peritoneal cavity was opened through a gastrocolic approach. The peritoneum over the pancreas was incised and the pancreas was exposed and explored. The gland was normal in appearance and no adenoma could be palpated, the exploration being carried well up toward the head of the gland. An attempt was made to cut off some of the blood supply to the tail of the pancreas in order to see

what effect this might have on subsequent secretion of insulin. A fine chromic suture was placed around the pancreatica-magna branch of the splenic artery and the accompanying vein, along with a small portion of pancreatic tissue, and these vessels were ligated.

The patient had a rather stormy post-operative course. Intravenous glucose was given until she was able to take fluid freely by mouth, and she was subsequently put on a high fat diet. On June 21 the blood sugar was 88 mg. per 100 cc. and the patient seemed greatly improved. Eight days later, however, the blood sugar dropped to 41 mg.

The patient was discharged on June 29, 1939, but returned three weeks later (July 20).

It was quite evident that partial ligation of the blood supply to the tail of the pancreas was of little benefit; for all symptoms were greatly intensified at this time. The blood sugar was 60 mg. per 100 cc. Again glucose was given intravenously and a resection was considered. On July 24, 1939, under spinal anesthesia (novocaine, 120 mg.) supplemented by ether, the gastro-colic omentum was opened through a left paracostal incision and the lesser peritoneal cavity exposed. Many dense adhesions were encountered. The pancreas was exposed, and, beginning at the tail, was mobilized by ligating with silk the numerous vessels from the splenic artery. Exploration well up toward the head of the gland revealed no adenoma. About three fifths of the gland was resected with a "V" shaped incision, which was closed with fine chromic sutures. A rubber tissue drain was placed in the lesser peritoneal cavity, and the wound was closed.

The pathological report was as follows:

Gross Examination: The specimen in formalin consists of a portion of pancreas which measures $4\frac{1}{2} \times 2 \times 2$ cm. Externally and on section it shows the normal appearance of a pancreas. At one end there are several small lobules surrounded by fat, one of which shows a slight amount of hemorrhage.

Microscopic Examination: The pancreas shows a definite increase in number of the islands of Langerhans. Most of these islands are of normal size, but occasionally islands are found which are two to two and a half times the normal size. The islands and the surrounding pancreatic tissue appear normal.

Again the patient's postoperative course was stormy, though on the fifth day she was able to take liquid nourishment freely. The temperature at that time was 99.4 F. and the pulse 96. However, there was subsequently a gradual rise of temperature with very profuse drainage of pancreatic secretion. This continued over a period of some days but gradually subsided. There was no wound infection. A small sinus persisted for several months.

The patient developed a persistent pyelitis following this operation with an irregular temperature. This slowly cleared up under sulfanilamide. The blood sugar gradually rose from 64 mg. on July 26, 1939, to 87 mg. on September 22, 1939, at which time the patient was discharged.

A glucose tolerance test made on September 16, 1939, showed the following blood sugar levels:

- First fasting—93 mg. per 100 cc.
- Second fasting—200 mg. per 100 cc.
- Third fasting—181 mg. per 100 cc.
- Fourth fasting—166.6 mg. per 100 cc.
- Fifth fasting—59 mg. per 100 cc.

Subsequent blood sugar determinations have been within normal limits and the patient has now returned to her work as a pupil nurse in the North Carolina Baptist Hospital.

Discussion

This patient was suffering from an extreme degree of hyperinsulinism associated with diffuse hyperplasia of pancreatic tissue. As is noted in the report of the pathologist, there was an increase in the number and in the size of the islands of Langerhans. There was no tumor of the gland, the pathological physiology of the condition being analagous to thyrotoxicosis due to diffuse hyperplasia of the functioning tissue of the thyroid gland. We consider this report of particular interest in view of the negative result of the first operative procedure—namely, ligation of the pancreatica-magna branch of the splenic artery. So far as we can learn, this procedure has not been carried out by any previous operator and its failure to exert any appreciable effect on the clinical state of the patient would seem to argue against its use in the future.

The eventual result has been most gratifying in this case. The patient was extremely ill for several weeks, however, and it must

be stressed that subtotal pancreatectomy is a formidable surgical procedure, and not to be advised or attempted without carefully weighing all factors. In the milder degrees of pancreatic hyperfunction dietary regulation, control of exercise, and care that meals are not delayed or missed will often suffice to control the condition.

CHEMOTHERAPY IN OBSTETRICS AND GYNECOLOGY

C. N. BURTON, M. D.

ASHEVILLE

In order to include so vast a subject in one paper certain topics must be omitted or the subject as a whole will be neglected. For this reason I have chosen only those problems which most frequently confront the obstetrician and gynecologist and in which chemotherapy is specifically indicated.

The introduction of the sulfonamides has brought about great advances in chemotherapy in all branches of medicine, and especially in the treatment of infectious diseases seen in obstetrics and gynecology⁽¹⁾. In spite of the enormous amount of literature available on the use and abuse of these compounds, this subject is the most important part of this paper.

In reviewing the literature we find that most authors recommend that patients receiving a sulfonamide drug be hospitalized, in order that toxic symptoms may be detected early and the proper concentration of the drug may be maintained. Hospitalization, of course, is the ideal, but when we are dealing with patients who cannot afford hospitalization and are practicing where hospital facilities are not available, there are few of us who do not treat ambulatory patients with these drugs, and we will continue to do so, especially since the less toxic sulfathiazole has become available. Although I am not advocating that these patients should be ambulatory, I would like to point out a few of the dangers which may be observed clinically in those cases where hospitalization either is refused or is impossible. Drs. Long, Haviland, et al⁽²⁾ of Johns Hopkins have given a very comprehensive paper

Read before the Section on Obstetrics and Gynecology, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

1. Douglas, R. Gordon: Use of Sulfanilamide in Obstetrics and Gynecology, *Int. Clinics* (September) 1940.

on the clinical findings in cases where toxic symptoms develop. We must bear in mind that these drugs carry potentialities of causing serious toxic conditions, and in rare cases have led to death. Generally speaking, then, it would seem unwise to use these drugs as indiscriminately as some practitioners are prone to use them. It is usually not necessary to discontinue therapy when mild toxic symptoms such as malaise, headache, dizziness, nausea, and mental depression are encountered; however, hematuria, anuria, drug rash, jaundice, or a rapid drop in the leukocyte count or hemoglobin usually demands the prompt cessation of the drug.

We should use all available laboratory means at our disposal; however, if the patient is clinically observed with care, all toxic conditions except leukopenia can be detected. An inquiry should be made for a history of previous toxic reactions from these drugs. Headaches, malaise, and other mild symptoms may be forerunners of more serious reactions. The sclera should be observed for jaundice, the mucous membranes and nail beds for pallor, and the skin for rashes; a close check on the temperature in relation to chills should be kept, and the output and odor of urine should be recorded.

The most important indications for use of these drugs are postpartum and postabortal infections. These patients should certainly be hospitalized. Cultures should be made under sterile precautions, from the vagina, from the throat, and from the blood. Sulfathiazole probably is the drug of choice except in infections with beta hemolytic streptococci or Welch's bacillus, where sulfanilamide usually gives much better results. The dosage must be adequate. With sulfanilamide I give 80 grains daily for three days, dropping to 60 grains daily for three days, and continuing 40 grains as long as necessary up to two weeks. For sulfathiazole the dosage is 4 Gm. daily for three days, 2.5 Gm. daily for four days to two weeks. Blood concentrations of the drug should be estimated when it is possible. A concentration between 8 and 10 mg. for sulfanilamide and 4 to 6 mg. for sulfathiazole is desirable. Too frequently the drug is discontinued as soon as the symptoms and the temperature have subsided. In many of these cases there will be a subsequent rise in temperature and a

recurrence of symptoms, which probably could have been prevented had the drug been used a few days longer. In very few cases do I consider sulfapyridine superior to sulfathiazole, except in some cases complicated by pneumonia.

Infections in the genital tract with the gonococcus do not present as serious a problem as they did a few years ago, if treatment is started early and adequately. Sulfanilamide and its related compounds have certainly found their place in the treatment of gonorrhea. The acute stages of the disease respond much more readily in the female than do the chronic. All cases should be properly diagnosed by smears, or, better, by cultures. The dosage mentioned previously is usually adequate. Sulfathiazole has rapidly replaced sulfanilamide in the treatment of gonorrhea, chiefly because it is less toxic⁽³⁾. I believe that it also gives a better response. In our venereal clinic in Asheville patients placed on this dosage of the drug remain ambulatory, most of them continuing their usual work and returning at weekly intervals for check-ups. I do not consider this a safe or an ideal way to treat these cases, but it is the only means of reaching this group of individuals who are infected, and it is most surprising to see the lack of serious complications. All are warned of toxic symptoms which may occur, and are instructed to stop therapy when they appear. In the past three months an average of 40 such patients have been seen each week. Only one patient of this group has had to discontinue medication, and that was because of nausea. In this case the dosage was cut down to 2 Gm. daily of sulfathiazole. She tolerated this and was subsequently cured. With the sulfonamide drugs we can cure gonorrhea in a larger percentage of cases. However, some physicians depend too much on chemotherapy and neglect other treatment because the acute symptoms have subsided.

There are undoubtedly many other uses for sulfanilamide and its associated compounds, but this paper will not permit time for their discussion. In milder infections some physicians are obtaining splendid results from small doses of the drugs, especially sulfathiazole. Many urinary infections

2. Long, Perrin, H. et al.: Toxic Manifestation of Sulfanilamide and its Derivatives, *J. A. M. A.*, 115:364 (August 8) 1940.

3. Mahoney, J. F. et al.: Sulfathiazole Therapy of Gonococcal Infections, *Am. J. of Syph., Gonor. and Ven. Dis.* (September) 1940.

will respond well to as small a dose as 1.5 Gm. of sulfathiazole daily. Other associated compounds are in an experimental stage, but I cannot report on them as I have not used them clinically.

Lounsbury⁽⁴⁾ has presented a splendid study of the action of ergonovine in the form of ergotrate (Lilly) on the postpartum uterus. For years the use of ergot has been primarily to control bleeding and to give tone to the uterine musculature. The prophylactic use of ergonovine in postpartum or postabortal patients is most gratifying in the reduction of morbidity. Involution takes place more rapidly and completely where small daily doses of the drug are given. Lounsbury suggests ergotrate, grains 1/320, three times a day for at least three days. If the fundus of the uterus subsequently becomes boggy with the development of a sanguineous lochia, the drug should be readministered. The use of ergonovine where foul lochia is present will give most gratifying results. In these cases I use ergotrate, grains 1/160, every four hours for six doses, giving a rest period of approximately twenty-four hours and repeating if necessary. Many of the morbid conditions will respond to this simple treatment alone; however, other supportive treatment such as elevating the head of the bed and forcing fluids should be given. In severe infections of the uterus ergonovine likewise plays an important part in expelling the contents of the uterus while treatment with sulfanilamide or sulfathiazole is being administered. In these cases I recommend the larger doses of the drug. It is true that occasionally after-pains are exaggerated by the use of ergonovine; however, the results more than justify the patient's discomfort.

I wish now to digress and discuss a condition which constantly confronts the gynecologist and the obstetrician. Volumes have been written on the treatment of leukorrhea, but I wish to stress again the importance of making a diagnosis of the actual cause before instigating treatment. Many of these cases are seen in the postpartum period as the result of lacerations of the cervix, which subsequently developed erosions with a mixed infection. Most of these cases respond simply to cauterization or coagulation, but many persist with an irritating discharge and the

usual discomfort. Microscopic examinations of the vaginal secretion should be done in all these cases to determine the type of infection.

Too often the patient has been treated for trichomoniasis without a microscopic examination, and has not responded to treatment. Many of these cases are mycotic infections, and a Gram stain of a vaginal smear will show the fungi with budding. Often this infection can be found in the prenatal patient with an irritating discharge. Trichomonas are easily detected if they are examined immediately in a saline suspension. The activity decreases rapidly but may be restored by warming the slide. No case should be treated for trichomoniasis unless the parasite has been definitely observed. As to the treatment of these two infestations, the fungi infection usually will respond to the use of gentian violet. The vagina should be carefully cleansed with tincture of green soap and dried. A 2 per cent aqueous solution of gentian violet is then applied to the entire vagina, cervix, vulva, and perineum. The gentian violet should dry thoroughly before the patient is allowed off the table. An alcoholic solution of gentian violet gives much better results, but is very uncomfortable to the patient, and its use should be limited to those with the least irritation.

The treatment of trichomoniasis has been widely discussed and I shall not enter into all of the various methods. Karnaky⁽⁵⁾ has given a splendid analysis of the treatment of a large number of these infections, and he concluded that the primary object is to maintain a highly acid reaction of the vaginal secretion. Much work has also been done with the use of arsenicals and I believe both methods of treatment have their virtues. In my own practice I have seen a large number of trichomonas infections which have responded well to a combination of these two principles. The patient is given vinegar douches and some arsenical, either as a powder or as a suppository. I have had much better results with these than with forms of picric acid. My best results have been with Carbarsone (Lilly) given as vaginal suppositories daily and capsules of the same drug given orally (grains 3 $\frac{3}{4}$) twice daily. Ten days' treatment is given, and if the parasite still persists the course of therapy

4. Lounsbury, James B.: Effect of Ergonovine on Postpartum Uterus, *Am. J. Obst. and Gynec.* 49:111 (July) 1940.

5. Karnaky, K. J.: Treatment of Trichomonas Vaginalis, *Am. J. of Surg.* 48:216 (April) 1940.

is repeated. Any erosions of the cervix are cauterized at the beginning of treatment. Frequently the parasite is found in the urine, and if it is still present following this treatment, an instillation into the bladder after catheterization of 0.6 Gm. neosarsphenamine dissolved in one ounce of water will usually give excellent results.

Conclusion

I wish to reemphasize the importance of close observation where chemotherapeutic agents are used. Indiscriminate use of these drugs is not only dangerous but unwise. I have tried to point out those clinical symptoms which are danger signals and which when properly observed and interpreted can help to avoid the untoward effects of chemotherapy.

Abstract of Discussion

Dr. Frank Sharpe (Greensboro): I graduated twenty years ago and started attending these section meetings. I would have been astounded if anyone had read a paper which offered any hope for streptococcus blood stream infection and gonococcus such as was presented here today. Chemotherapy has certainly given medicine a new stimulus. I am interested to see what will happen to the Negro race in North and South Carolina. My feeling is that gonococcus has kept the Negro race from predominating. Negro girls have salpingitis early and become sterile, and therefore the Negro population has been kept down.

It is an astounding fact that in 1939 180 tons of the sulfonamides were sold in the United States. I think we can go too far in its use, but I don't think you can say too much about it.

Insomnia—For the relief of insomnia, various measures have been advocated. A long walk is beneficial to some individuals; a warm tub bath relieves many. Some beverage, such as warm milk, following a warm bath, helps. These measures are usually insufficient and the patient frequently needs the assistance of some chemical sedative. There are certain physicians who condemn the use of sedatives for depressed patients. The opposition is based upon the fact that it is "artificial sleep", that the sedative habit may be formed, and that some patients are left drugged and drowsy the next day. There is some truth to these protests against sedatives, but, by and large, their advantages far outweigh the disadvantages. The distress of a long night of vigilance with fear and worry, pacing and panting, is far more harmful to the nervous system than the use of properly selected sedatives. Furthermore, most depressed patients who recover discontinue sedatives voluntarily. It is rare for the use of such medication to become habit forming. The choice of a sedative will depend upon the individual and it is a common experience that the medication may have to be changed from time to time in order to get the best possible effect.—Joseph L. Fetterman: *The Nature and Modern Treatment of Depressions*, Ohio State M. J. 37:859 (September) 1941.

ASPIRATION OF LIPIODOL INJECTED FOR THE DIAGNOSIS AND LOCALIZATION OF RUPTURED INTER-VERTEBRAL DISCS

BARNES WOODHALL, M. D.

DURHAM

Since the introduction of lipiodol by Sicard⁽¹⁾ in 1921, the procedure of myelography by means of this contrast medium has been widely used in the diagnosis of spinal cord neoplasms. The presentation of the clinical syndrome of the ruptured intervertebral disc by Mixter⁽²⁾, in 1934, has greatly extended the use of this contrast medium in the lumbar subarachnoid space. In our experience with ruptured intervertebral disc, lipiodol has demonstrated a net positive and negative error in localization of approximately 10 per cent.

In addition to lipiodol, the use of air or oxygen and thorium dioxide has been suggested, and clinically accepted, for the diagnosis and localization of disc lesions situated in the low lumbar region. Of the three contrast media under consideration, air injection shows a diagnostic error of fully 50 per cent. For this reason, and because of the attendant discomfort to the patient, the use of air as a contrast medium has been abandoned after due trial in the Duke Hospital. Thorium dioxide myelography presents a very graphic picture of the spinal subarachnoid space⁽³⁾. Its harmless nature and clinical value have been fully demonstrated. Removal of the injected material entails, however, forced spinal drainage. It has not been used in this hospital.

Although careful neurologic examination of the patient with a suspected rupture of the intervertebral disc will allow exact diagnosis and localization of the lesion in a considerable percentage of cases, yet visual demonstration is demanded in the majority of instances. The clinical problem of low back pain and sciatica is often a very diffi-

From the Neurosurgical Division of the Department of Surgery, Duke Hospital, Durham. Submitted for publication July 29, 1941.

1. Sicard, J. A., and Forestier, J.: *Methode radiographique d'exploration de la cavite epidurale par le lipiodol*. Rev. Neurol. 28:1264, 1921.
2. Mixter, W. J., and Barr, J. S.: *Rupture of the Intervertebral Disc with Involvement of the Spinal Canal*, New England J. Med. 211:210 (August 2) 1934.
3. Nichols, B. H., and Nosik, W. A.: *Myelography with the Use of Thorium Dioxide Solution (Thorotrast) as a Contrast Medium*. Radiology 35:439 (October) 1940.

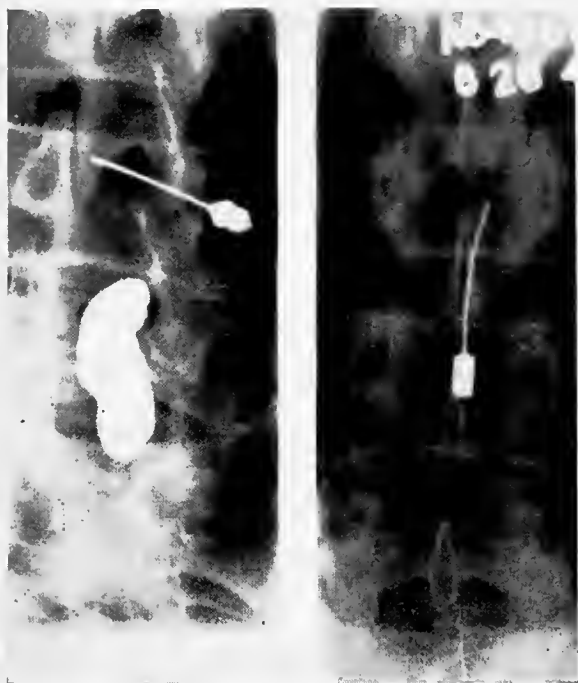


Fig. 1

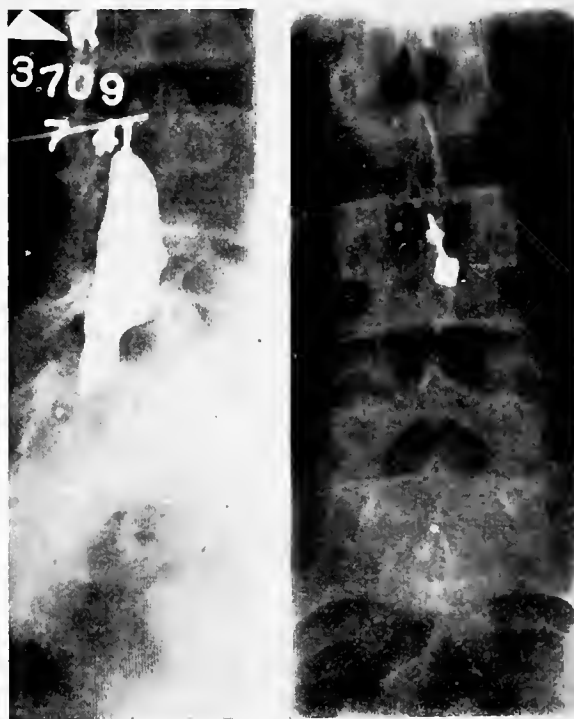


Fig. 2

cult one to solve. This is illustrated by the statistics of the Industrial Commission of North Carolina, which show that 2,514 "back sprains" were reported to the Commission during the past year⁽⁴⁾.

Although the necessity of lipiodol examination is apparent, it is not an unusual experience to hear bitter condemnation of the use of lipiodol as a contrast medium, both by physicians and by members of the legal profession practicing in our courts of industrial compensation. Actual evidence of a deleterious effect from the use of lipiodol in the subarachnoid space is meager⁽⁵⁾. Acute reactions characterized by a pleocytosis and coccygeal pain of short duration are not uncommon. We have not seen late sequelae which could be attributed to the use of lipiodol.

It is the purpose of this brief report to confirm the observations made by Kubik and Hampton⁽⁶⁾ that lipiodol injected in the lumbar subarachnoid space may be readily removed by aspiration at the conclusion of the required roentgenological study. The application of this technique should obviate any

valid criticism of lipiodol injections, and allow the physician unhampered use of this valuable contrast medium. In the period between May 28, 1941, and June 26, 1941, lipiodol was injected into the lumbar subarachnoid space, and subsequently aspirated, in ten of twelve patients with the clinical diagnosis of a ruptured disc. The two remaining patients were operated upon and discs were resected on the basis of neurologic changes alone, without prior visualization of the ruptured disc. The technique used is relatively simple.

The patient is placed on the tilting fluoroscopic table in the lateral position, and lumbar puncture is done in the third lumbar interspace under local anesthesia, or under pentothal sodium anesthesia in cases with severe lumbar pain and rigidity. It is essential to introduce the needle in the midline with its point approximating the anterior margin of the dural envelope. The initial subarachnoid pressure, and the pressures resulting from compression and release of the jugular veins are measured, and 5 to 10 cc. of fluid are removed for cytologic, serologic and chemical studies. Three cubic centimeters of lipiodol are injected, and, with the needle *in situ*, the patient is placed in the ventral prone position and fluoroscopy of the contrast medium is performed. Anterior-

4. Dr. W. C. Horton, Medical Director, North Carolina Industrial Commission: Personal communication.

5. Marcovich, A. W., Walker, A. E., and Jessico, C. M.: The Immediate and Late Effects of the Intrathecal Injection of Iodized Oil, J. A. M. A. 116:2247, (May 17) 1941.

6. Kubik, C. S., and Hampton, A. O.: Removal of Iodized Oil by Lumbar Puncture, New England J. Med. 224:455 (March 13) 1941.

posterior and oblique roentgenograms are taken and immediately developed. When the diagnosis of a disc lesion is established or denied, the lipiodol, under fluoroscopic vision, is centered over the third interspace, in which the lumbar puncture has been performed, necessarily the most dependent part of the lumbar subarachnoid space in this position. Slow, continuous aspiration with a 20 cc. syringe attached directly to the lumbar puncture needle, with turning of the needle if momentary block of flow is encountered, results in the removal of the lipiodol mass. Unnecessary manipulation of the spinal fluid-lipiodol mass is contraindicated. If the lipiodol mass should break up, separate globules under fluoroscopic control may be centered at the appropriate area for aspiration. Twenty to thirty cubic centimeters of spinal fluid may be aspirated during this procedure.

In three patients, complete aspiration of the lipiodol was attained under roentgenographic control, as attested by figure 1. In four, only a minute globule of lipiodol remained visible in the post-aspiration roentgenograms (fig. 2). In one case, 0.5 cc. of lipiodol remained trapped behind the obstruction of a protruding disc. In one patient, only half of the injection mass could be aspirated because of the lateral position of the needle point. Re-introduction of the needle appears indicated under such circumstances. In the last case, the initial subarachnoid pressure was 20 mm. of water at the time of the lipiodol injection, following two lumbar punctures on the previous two days. Fluoroscopic study of the injection mass showed a flattened out, collapsed dural envelope in which the lipiodol moved but sluggishly. In this instance, only half of the lipiodol could be aspirated.

Conclusions

Lipiodol is a valuable adjunct to the diagnosis and localization of disc lesions in patients with complaints of low back pain and sciatica. Its clinical use has been restricted because of the fear of harmful sequelae. Aspiration of the contrast medium may be readily accomplished by the procedure described in this paper.

IS DIVERTICULITIS OF THE COLON A SURGICAL DISEASE?

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ASHEVILLE

Unfortunately for the patient, diverticulitis is sometimes treated as a surgical condition when it is wholly a medical disease. The condition becomes surgical only when it is complicated by complete obstruction, perforation or abscess. Since these complications are not exceedingly common and often occur late in the course of improperly treated simple acute diverticulitis, it is of the utmost importance that the true medical nature of the condition be understood.

It is axiomatic that you cannot have diverticulitis without a pre-existing diverticulum. A diverticulum, as you all know, is simply an out-pouching of the lumen of the gut through a defect in the muscular layer of the bowel. Thus, a majority of colonic diverticulae have but two layers in their walls, the mucosal and the peritoneal. Muscular tissue is wholly absent. Diverticulae occur at any point on the circumference of the bowel, but they are most frequently found on the mesenteric border. They occur at any level of the bowel, but the vast majority are localized to the descending colon and sigmoid. The mechanism of their formation need not concern us. Suffice it to say that they begin to make their appearance during the fourth decade of life and that they are more common in obese and constipated people. They vary greatly in size, being as small as a pea or as large as a plum. They vary in number from one to several hundred. They produce few, if any, symptoms and should be looked upon only as interesting anatomic anomalies unless they become the seat of an inflammatory process. Since diverticulae are most commonly found in the sigmoid and descending colon, it is obvious that diverticulitis should be more frequent in these segments of the bowel than in any other. Experience has shown that this is so and that diverticulitis occurring elsewhere than in the left lower abdomen is distinctly a rarity.

The symptoms of diverticulitis vary with the extent and degree of inflammation. There may be little more than tenderness

¹Read before the Section on the Practice of Medicine, Medical Society of the State of North Carolina, Pinehurst, May 20, 1941.

and slight cramping pain in the left lower abdomen, or there may be severe pain, marked tenderness, rigidity and tumefaction together with obstipation, fever, leukocytosis, nausea and vomiting. It is wise, when one is confronted with such symptoms in a person of middle age, to keep the possibility of diverticulitis in mind, because operation can usually be avoided if energetic medical treatment is instituted immediately. On the other hand conditions such as volvulus, appendicitis, infected malignancy or ovarian cyst with twisted pedicle may give almost identical symptoms, and differential diagnosis may be exceedingly difficult.

Since a diverticulum is similar, in many respects, to a vermiform appendix, it would seem that acute diverticulitis should be as much a surgical condition as is acute appendicitis. This, however, is not so, for several reasons. The most important is the fact that acute diverticulitis will usually subside promptly and completely if adequate medical treatment is given. Diverticulitis does not commonly give rise to generalized peritonitis; hence conservative treatment is less hazardous than in acute appendicitis. A third reason for conservative treatment of diverticulitis is the fact that this condition does not lend itself to the simple surgical procedure of clamping, resection and inversion of the stump which is so satisfactory in dealing with appendicitis. The bowel wall adjacent to an infected diverticulum is usually inflamed, edematous and friable. Stitches often fail to hold in such tissue, and if they give way, peritonitis, local abscess or fecal fistula is almost sure to supervene. Since these complications are as serious as any which may result from medical treatment, it is clear that in a majority of instances there is little to be gained by surgical treatment of acute diverticulitis. If diverticulitis is discovered during an operation for suspected appendicitis, there is strong temptation for the surgeon to try to "do something." He is naturally reluctant to close the abdomen without having attempted to remove the source of symptoms. But this is one of the situations in surgery where "to do something" is to court disaster. Most surgeons of wide experience state that if they unexpectedly encounter acute diverticulitis during an exploratory operation, they close the abdomen immediately, either with or without drainage. They strongly advise against

manipulation of the mass and state that attempts to resect it are extremely unwise.

Before considering the treatment of diverticulitis in detail, let us return for a moment to the subject of diverticulosis. Just what should you tell a patient whose x-ray examination shows "negative colon except for presence of multiple diverticulae"? You know that the diverticulae do not explain his symptoms. Why not disregard the report and tell him his colon is negative? After all, only about one out of six persons with diverticulae is destined to have diverticulitis. This would seem to be a satisfying ratio of safety, and yet the complications of diverticulitis are so serious that not even this small risk should be taken. I believe most patients should be informed of the presence of diverticulae unless there is real danger of establishing a "diverticulitis phobia", in which case some responsible relative may be taken into confidence. They should be told that diverticulae are harmless and without symptoms unless they become infected, and that infection can be avoided if normal bowel habits are established and gross roughage is eliminated from the diet. If, in spite of these precautions, abdominal pain and tenderness develop, the patient should remember, especially if he is away from home, to tell his doctor that he has diverticulae in the colon. This one reminder may save him from an unnecessary and possibly dangerous exploratory operation.

When inflammation of a diverticulum occurs, what are the usual symptoms and findings, and what are the approved therapeutic measures? Let us consider first the problem presented by simple, uncomplicated, acute diverticulitis. Usually the patient gives a history of increasing constipation for a few days, together with more or less pain or tenderness in the left lower abdomen. The pain and tenderness may occur in the midline or even in the right lower quadrant if a portion of the sigmoid is located on that side. Obviously, appendicitis may be suspected in such a case, but in the vast majority of instances the left lower quadrant location of distress aids in localizing the lesion to the sigmoid. There may be neither leukocytosis nor fever. A palpable mass is uncommon also, since the symptoms are due mainly to slight inflammation of the diverticulum plus local spasm of the involved segment. In this type of case a careful barium

enema study usually makes the diagnosis. A relatively long, spastic, tender segment of sigmoid is seen under the fluoroscope. The mucosa is intact, but because of spasm of the circular fibers it may give a double saw-tooth appearance to the involved segment. The finding of diverticulae in the adjacent bowel completes the picture of simple diverticulitis with enterospasm. Treatment of this type of diverticulitis should always be conservative. The patient should be put to bed with continuous hot stupes to the lower abdomen. The diet should be liquid and non-residue in type. Cautiously administered hot saline rectal irrigations reduce spasm, inflammation and tenderness to a marked degree. Sedatives and antispasmodics may be used if needed. Such treatment is almost invariably followed by rapid subsidence of symptoms within a very few days, but treatment should be continued for several weeks if possible to give the inflamed bowel a chance to heal completely. I feel that such a patient should have a thorough understanding of the nature of his trouble, since future difficulties may be avoided if he cooperates intelligently with his medical advisor. A bland, low residue diet should be prescribed and the dangers of bran, seeds, skins, popcorn and coarse cellulose fibers pointed out. The establishment of normal bowel functions is of the utmost importance. Retention enemas of mineral or olive oil at bedtime are helpful. Such oils may also be taken by mouth. Some experts prescribe a tablespoonful of barium once or twice a week with the idea of keeping the diverticulae filled with this non-irritating material. A sedative, antispasmodic mixture containing belladonna, Hyoscyamus and phenobarbital often is of value in these cases. The patient must be impressed with the necessity for prompt medical attention should constipation, tenderness or pain recur. If these patients can be made to realize that prompt and energetic treatment of early acute diverticulitis may save them from serious complications of this disease, they are much more inclined to cooperate intelligently than if they are simply given a diet list and ordered to abide by it.

Let us follow our patient with acute diverticulitis a bit further. If his diverticulitis fails to subside completely, or if he is unfortunate enough to have recurrent attacks, he will eventually develop a condition

of chronic inflammatory infiltration of the bowel wall adjacent to the infected diverticulum. Such infiltration markedly thickens the walls and inevitably narrows the lumen of the gut, thus producing variable degrees of obstruction. The symptoms now are those of increasing constipation, pain during defecation, and constant tenderness in the left lower quadrant. A tender mass can be felt either by abdominal or rectal examination. During an acute exacerbation of symptoms there may be fever and leukocytosis. Differentiation of obstructing diverticulitis from carcinoma may be difficult. Barium enema examination reveals a more constant filling defect than was seen in diverticulitis with enterospasm, but the integrity of the mucosa is still apparent and the filling defect is much longer than is the case with carcinoma. The defect tends to fade out gradually into normal bowel at either end instead of revealing a sharp demarcation between normal and abnormal bowel as is frequently the case with cancer. The history of repeated episodes of left lower abdominal pain and tenderness, together with bowel irregularity over a period of months or years, is also suggestive of diverticulitis. Proctoscopic examination may be of value if it reveals normal mucosa in a gradually contracting lumen.

Treatment of this stage of diverticulitis should still be conservative and should be essentially the same as that for simple diverticulitis with enterospasm. It is desirable to continue treatment for several weeks after the symptoms and findings have subsided.

If, in spite of energetic treatment, inflammation fails to subside, increasing obstruction of the bowel is the most common complication of this stage of diverticulitis. Obstruction should be treated conservatively by means of the measures already outlined plus the use of the Miller-Abbott tube. If response is inadequate, the surgeon must decide the optimum time for operation. Every effort should be made to differentiate clinically between diverticulitis and cancer, because all too frequently the surgeon is unable to make this distinction at the time of operation. Primary resection of the obstructing mass is extremely hazardous because of the danger of peritonitis. The Mikulicz procedure is rarely feasible because the mesentery is so shortened and thickened as

to prevent exteriorization of the mass. In most instances the surgeon must content himself with a cecostomy or colostomy in the transverse colon. Diversion of the fecal current, plus irrigations of the distal segment with warm saline solution, has a remarkable healing effect upon the inflamed and obstructing mass. Not infrequently it melts away and obstruction is largely relieved. If obstruction persists, and especially if there is fear of malignancy, resection of the involved segment should be carried out. If inflammation has been reduced and the lumen of the gut rendered clean by through and through irrigations between colostomy and rectum, resection carries but little mortality. It may be that sulfaguanidine, one of the newer sulfonamide derivatives, will be of value in this type of case. This drug is poorly absorbed from the bowel and can be given in such concentration as to render the lumen of the gut practically sterile. Irrigations through the colostomy and rectum with sulfaguanidine should, theoretically at least, be more effective than similar irrigations with saline solution. The incidence of peritonitis following resection of diverticulitis may be significantly lowered if this new drug lives up to advance notices.

Perforation may occur in diverticulitis either during the acute primary stage or after infiltration of the bowel wall is manifest. Perforation into the peritoneal cavity with subsequent generalized peritonitis is fortunately rare. In case of acute, fulminating perforation the symptoms may be so alarming as to necessitate immediate exploration. The diagnosis is frequently in doubt until the abdomen is opened. When the cause of perforation is ascertained, the surgeon should be content to insert a drain and a few grams of sulfathiazole and close the abdomen immediately. If the patient is not seen until twelve or twenty-four hours after perforation has occurred, the surgeon may elect to wait for localization of the process, after which simple drainage is in order.

Perforation most frequently occurs in a chronic form, with development of a peridiverticular abscess. In males, the symptoms of chronic diverticulitis may be overshadowed by genito-urinary symptoms because of the proximity of the inflammatory process to ureter or bladder. In females, the condition is frequently mistaken for tubo-

ovarian abscess. The differential diagnosis is often difficult and depends upon careful evaluation of history, rectal and abdominal palpation, and barium enema examination. If the peridiverticular abscess is not drained, it may perforate into the bowel, the urinary bladder or the pelvic floor. Perforation into the bowel is a happy circumstance and is followed by rapid subsidence of symptoms. Perforation into the bladder results in the miserable complication of vesicocolic fistula. Perforation through the abdominal wall or pelvic floor is followed by persistent abdominal fistula. It is useless to attempt to close an abdominal or vesicocolic fistula in a primary operation. Such attempts are destined to fail unless they have been preceded weeks or months before by a colostomy well above the area of involvement.

Conclusions

- (1) Acute diverticulitis of the colon is never a surgical disease unless complicated by obstruction or perforation.
- (2) Only 15 to 20 per cent of patients with diverticulitis will require surgery if they are adequately treated by conservative measures.
- (3) If obstruction requires surgery, colostomy should almost always precede resection.
- (4) Perforation should be treated conservatively, if possible, until localization has taken place, after which simple drainage of the abscess is the best procedure.

Abstract of Discussion

Dr. Julian Moore (Asheville): I think all surgeons will agree with the premise of this paper that diverticulitis is not a surgical disease unless it becomes complicated by some surgical disaster.

In a large series of cases reported by Dr. Rankin 17 per cent of them required surgical intervention. In all probability the percentage could have been reduced if the patients had been adequately treated in acute diverticulitis.

Indications for surgical treatment have been outlined by Dr. Johnson, but for the sake of emphasis, I will repeat them.

When diverticulitis is complicated by abscess, unquestionably surgery is indicated, and as Dr. Johnson said, the indication is simply to drain the abscess and then get out. Usually a perforation is very slow. The patient develops an infectious granuloma that produces a mass. Probably every surgeon has found such a mass in the colon upon opening the abdomen, and has backed out after doing the preliminary colostomy, thinking that the patient had cancer. Several weeks later the mass would disappear. A number of those cases have been reported, particularly by Mock. If surgeons

do not perform a cecostomy or colostomy, a resection must be done.

The next indication for surgery is fistula. Frequently after drainage for a perforated diverticulitis, an external fecal fistula results. Occasionally the sigmoid may attach itself to a loop of small bowel or bladder and perforate, resulting in internal fistula. That type of patient can only be cured by surgery. You cannot cure a patient by resection of the fistula alone. The diseased area in the colon must also be resected.

Very occasionally a diverticulitis or diverticulosis may be associated with carcinoma, and then it is a surgical condition. The incidence in Dr. Rankin's picture was not over 2 per cent, which is rather surprising. Carcinoma is not a frequent complication of diverticulosis or diverticulitis, and neither is diverticulosis a common finding in carcinoma of the colon.

There is a last indication for operation which I think Dr. Johnson failed to mention, and that is occasional diverticulosis with persistent hemorrhage. Bleeding from the diverticulum is unusual, and when it occurs one cannot be sure that there is not another cause for bleeding other than the diverticulum. In such cases, the surgeon is perfectly justified in exploring the abdomen, because that is the only way he can make a diagnosis. If persistent bleeding occurs, it is usually due to carcinoma rather than to diverticulitis.

Dr. Johnson very rightly brought out that surgery in the left side of the bowel can be successfully done if it is divided into two stages. It cannot be successfully done in one stage. That is perfectly true of diverticulitis, as it is of carcinoma of the colon. If resection has to be done, it should be a two-stage procedure, the first stage being either cecostomy or colostomy, and the second stage resection.

I think most surgeons will agree with Dr. Johnson, that diverticulitis is not a surgical disease. We wish that all such cases could be cured medically, because the mortality rate is high in the surgical treatment of complications. Dr. Haywood reported 37 per cent mortality in those operated upon.

Dr. William deB. MacNider (Chapel Hill): I was wondering about the use of sulfaguanidine in controlling the chronic infections in diverticulitis and preventing either the development of pericolic thickening or, in acute carcinoma, the weakening of the intestinal walls.

Dr. E. K. Marshall, Jr., says that sulfaguanidine has no immediate effect, but tends to lessen the growth of bacteria within the lumen of the bowel. Sulfaguanidine and perhaps some related chemicals exert their effects within the colon.

Dr. Frederick Taylor (High Point): I should like to ask Dr. Johnson what the dosage of sulfaguanidine is when used in this connection, and what strength he uses when giving the solution as an enema? Is a retention enema used?

Dr. R. B. McKnight (Charlotte): I think that diverticulitis is primarily and in the vast majority of cases merely a medical problem. There are certain complications which call for surgical intervention. In the few cases that need surgery, diverticulitis has to be handled somewhat like malignancy in that area of the bowel. It usually calls, in my opinion, for a resection, and the safest type of resection is the Mikulicz type, in which the loop of gut is brought out of the abdominal wall, exteriorized and handled as if it were a malignancy.

Dr. Johnson: I wish to thank the gentlemen for the discussion.

As far as sulfaguanidine is concerned, I admit

complete ignorance as to dosage, either by enema or mouth. So far as I know, no information has been published as yet. I learned through personal communication that Dr. Barton, of the Mayo Clinic, has used it in diverticulitis without any evidence whatsoever that it does any good. He admits, however, that he has not used it long enough to be able to express a final opinion. It would seem that sulfaguanidine would not be particularly valuable in diverticulitis, because the lesion is primarily extraluminal. It is either in the bowel wall or peribowel tissues. Sulfaguanidine is an insoluble substance, and stays in the lumen of the bowel. It kills bacteria in the bowel, but I doubt that it would do anything in the peribowel tissues.

RHEUMATIC FEVER

EUGENE M. CARR, M. D.

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What is acute rheumatic fever? We are all familiar with the typical case in a child or a young adult who is taken ill with a sore throat, and a few days later develops the signs of acute inflammation in one or more joints, followed by evidence of general infection and involvement of the heart. We know that the cardiac signs may vary from a slightly increased pulse rate and a barely audible systolic murmur to rapidly developing congestive failure. We know, too, that the same patient, during the course of his disease, may show disorders of the serous membranes, the subcutaneous tissues, the skin or the nervous system. We may be quite familiar with this so-called "rheumatic series" and still be unable to answer the question, "What is acute rheumatic fever?"

Our difficulties are several: In the first place the etiology is unknown; in the second place by far the great majority of cases are atypical and do not conform to the textbook picture; and in the third place the term I used subconsciously is an old fashioned misnomer long ago discarded. It is true that the disease may occasionally be acute, with a sudden onset, fulminating course, and fatal termination, but it is much more often insidious in onset with a chronic course of months' or even years' duration, with many remissions and exacerbations. It is true that it is usually rheumatic in the sense of having one or more joints involved, but this is by no means always the case. It is true that fever is usually present at one time or another, but some of the important manifestations—for example, chorea—are often

entirely afebrile. So even the current term "rheumatic fever" is not at all satisfactory, and the suggestion has been made that the syndrome might well be called by some man's name until more is known of its cause.

The problem of cause, after much investigation and controversy, remains unsettled. Some twenty years ago the current evidence pointed to a streptococcal origin and we were then taught that it would only be a question of more work until a specific streptococcus could be isolated and generally agreed upon as the infecting agent. Since that time pathologic studies have clearly proved that rheumatic fever is a systemic disease, probably an infection, producing characteristic lesions in various tissues. However, attempts to isolate a specific causative organism from the joints, heart valves, exudates or tissues have so far failed and the disease has never been reproduced in animals.

The filtrable virus theory has of course been suggested and it was once thought that a virus might gain access to and remain fixed in the living tissues—thus explaining the chronicity. Certain elementary bodies were described which were recovered from the pleural and pericardial exudates in rheumatic fever, and were agglutinated only by the serum of rheumatic fever patients. But other workers have been unable to confirm these findings and the filtrates also have failed to reproduce the disease.

More recently an attempt has been made to explain the situation at least partly on the basis of allergy—meaning in this case a sensitivity of the joints to bacteria and their products rather than the protein sensitivity of asthma and hay fever. The joint swelling after a sore throat may be the allergic response of tissues previously sensitized by a specific or non-specific streptococcal infection of the respiratory tract. This might account for the fact that the joints are usually sterile even when the signs of inflammation are present. It might also account for the difference in types of response on the part of different hosts.

At all events, whatever the cause—streptococcus, virus, allergy or a combination—the disease is more common and more important than those of us who live in a part of the country where we seldom see it might suppose. There are about one million rheumatic heart cases in the United States with

a yearly incidence of about one hundred seventy-five thousand new cases of rheumatic fever. Conservative students agree that it is the most frequent cause of heart disease in patients under 40, and many believe that it is the one and only cause of mitral stenosis. Add to these facts the realization that rheumatic fever may cripple the individual at the very beginning of his active life, and the disease assumes an importance not far below that of diabetes, tuberculosis and syphilis.

Regarding its incidence some data seem well established. It occurs much more frequently in cold damp climates and in cold damp seasons of the year. For example, the percentage of hospital admissions for rheumatic fever in Boston is ten times that in Miami. It is more common in the lower income groups, and the initial attack is most apt to occur between the ages of 9 and 11 years. There seems to be a certain familial tendency but the questions of contagion and of hereditary susceptibility are still poorly understood.

In rheumatic fever pathologic and clinical manifestations are so easily correlated that one is tempted to ignore the traditional order of discussion, and to consider the "rheumatic series" as such without sharply separating laboratory from bedside observations.

As in many infections, fever, leukocytosis, increased sedimentation rate and anemia are apt to be present and usually parallel the severity of the underlying process. It should be emphasized, however, that there is nothing specific about any of these findings, and postmortem evidence of rheumatic activity in the absence of all of them has been reported.

Tonsillitis was long considered a necessary precursor to the arthritis and carditis, and older writers recognized "rheumatic angina" as a clinical entity. After tonsillectomy became a routine procedure there was a general tendency to substitute the term "nasopharyngitis". The best available figures indicate that tonsillitis precedes rheumatic fever in only about 15 per cent of the cases. The same figures do not support the idea of a specific etiological relationship between streptococcal upper respiratory infection and rheumatism. They indicate that the disease may follow a streptococcal respiratory infection or a non-streptococcal respiratory infection, or may occur independent of any

respiratory infection in about the same percentage of cases.

The joint symptoms vary from mild "growing pains" to severe polyarthritis with all the classic signs of acute inflammation. It is probable that many cases dismissed as "growing pains" are really subclinical rheumatic fever. True polyarthritis is more frequent in adults than in children and in the typical case one joint becomes inflamed as another subsides. Pain and tenderness are often exquisite and at times quite out of proportion to the swelling. The knees, ankles, wrists and elbows are most frequently involved and may show recurring evidences of arthritis alternating with periods of remission during the course of months or years. Fluid obtained on tapping the joints is usually sterile, and recovery from joint symptoms is practically always complete.

For many years it has been recognized that the cardiovascular system shows the most important lesions of rheumatic fever, and recent authorities agree that the heart is probably always involved. The damage may be transient or permanent and is serious in about 50 per cent of the cases. Usually there is wide-spread involvement of all the cardiac structures, but in varying degree; in some cases the myocardium, in some the pericardium, and in others the endocardium and valve leaflets may show more striking changes. Clinically it may be impossible to determine the relative degree of damage to the different portions of the heart, but from the pathologic standpoint the mitral valve is injured in all cases of rheumatic carditis, the aortic in about one half, and the pericardium much more frequently than is recognized during life—possibly in 100 per cent of all fatal cases. Clinically again the heart damage may be minimal, with no circulatory symptoms, or there may be varying signs of myocardial weakness up to and including congestive failure. A recurrence may at any time activate what was previously a subclinical carditis and it would seem that the degree of cardiac involvement increases with the duration of the disease. To establish reliable mortality figures a considerable number of patients would have to be followed for at least thirty years. So far this has not been done, but in a series of children observed for ten years the mortality at the end of that time was 20 per cent—most of the deaths being due to active carditis.

Chorea, the fourth member of the "rheumatic series", was first described by Sydenham and was once confused with the dancing mania prevalent at the time. It is common in children, occurring in about 40 per cent of the cases. It is rare in adults and is seldom fatal. The first symptoms are often personality changes or emotional upsets followed by irregular, incoordinate, purposeless movements sometimes severe enough to interfere with walking or talking. The duration varies greatly. The attacks appear to be self limited, and show the usual tendency to recur. It is worth noting that choreiform movements occur in other infections quite distinct from the rheumatic cycle.

Other common signs of rheumatism such as subcutaneous nodules, skin eruptions, nose bleeds, pleural, pulmonary and hepatic lesions I can mention only in passing and note that they are reported in varying frequency by different observers.

What is the pathology underlying these diverse clinical manifestations? It is chiefly a widespread connective tissue reaction with distinct exudative and proliferative phases producing lesions in various organs, especially the cardiovascular system and the serous membranes. The exudative stage usually lasts only a few weeks, its end being marked by the subsidence of signs of acute infection. During this time, in the heart muscle there has frequently been noted swelling and fragmentation of the connective tissue ground substance and wandering in of granular cells around the arterioles. The proliferative stage which follows may last as long as six months and corresponds to the period of subacute clinical symptoms. The perivascular lesions in the heart now show collections of large irregular cells with multiple vesicular nuclei. These cells either develop into fibroblasts or are surrounded by them, so that the entire picture is that of a minute scar. Thus the Aschoff bodies or submiliary granulomata, characteristic of the disease, are formed. First described by MacLagan in the myocardium and proved specific by Aschoff, they have since been found in the endocardium, adventitia of blood vessels, tonsillar capsule, peritoneum, meninges and lungs. The end result of these lesions is thought to be the pinpoint, triangular or flame-shaped areas of grayish white so often seen in the cut section of hypertrophied heart muscle.

Histologic pictures quite similar to the Aschoff bodies are described around the vessels, in the connective tissue sheaths and in the synovial membranes of inflamed joints. The subcutaneous fibroid nodules, thought to be of bad prognostic significance since they are more often found attached to the tendon sheaths in severe cases, also resemble the Aschoff bodies.

The heart valves, too, show a distinct difference between the acute and chronic stage. The verrucae—small, firm, wartlike projections seen along the line of closure of mitral and aortic valves in the acute stage—are probably not responsible for the clinical valvular insufficiency. The cause of this is more likely a dilation of the valve rings. However, in the chronic stage, the valvular deformities consisting of fibrous thickening and fusion of the cusps, with shortening of the chordae tendineae, obviously cause stenosis. Many pathologists now believe that the path of infection in valvulitis is through branches of the coronaries rather than through the circulating blood. Either of these views seems to take for granted a blood stream infection which is not yet proven.

Pericarditis is one of the most important complications. Though often unrecognized clinically, it occurs in practically all of the fatal cases and in many of the severe ones, and is usually of the fibrinous type. Repeated attacks are frequent, and painful, crippling adhesions may result. When effusion develops, tapping may be necessary to relieve pressure, in which case the fluid is consistently sterile on culture. The same is true of the spinal fluid in chorea—essentially a meningo-encephalitis—and of the pleural fluid in rheumatic pleurisy.

From the foregoing remarks two points must be obvious: first, the need for long continued medical supervision; and second, the fact that there can be no true specific therapy until the cause is determined. The many and varied forms and complications of the disease may require the physician's actual attendance for a period of from several months to several years, during which time, except for general principles, each case is a law unto itself. The maintenance of adequate nutrition, the avoidance of intercurrent infections, the adjustment of rest and exercise are all problems which call for experienced guidance. "When in doubt, pre-

scribe rest," is a good rule to follow. If the disease is suspected the patient should be ordered to bed for a period of observation until a diagnosis can be established. The patient with signs of activity must remain in bed. The convalescent after an acute attack, especially if there has been active carditis, should ideally continue to rest until all signs of activity have disappeared. This means not only the subsidence of clinical symptoms, but the return to normal of pulse, temperature, leukocyte count and sedimentation rate. This may require months, or in some cases years, and rest should be enforced until the patient can carry on ordinary duties without circulatory symptoms. Palpitation, dyspnea and precordial distress are better criteria than the size of the heart or the presence of murmurs.

Tonsillectomy should *not* be done during the period of rheumatic activity. It is a moot question whether tonsillectomy has any influence on recurrences or on the incidence of cardiac involvement, but the consensus of opinion seems to be that the operation is of value only in proportion to its effect on the general health.

The salicylates are often considered "specifics" in the treatment of rheumatic fever. Strictly speaking, this is not true. Their proven and unquestioned usefulness is due to the fact that they relieve pain and reduce fever, but they do not prevent recurrences or cardiac damage, and there is no evidence that they have any direct inhibitory effect on the etiologic agent. In cases with joint involvement they should be given in full doses, 120 or more grains of sodium salicylate, or 50 or more grains of aspirin daily. The improvement in such cases is often dramatic. If necessary, local applications of methyl salicylate may be used in addition. In chorea or subacute carditis they have no particular value and often mask the signs of activity. When the salicylates are not well tolerated, as shown by deafness, nausea or vomiting, amidopyrine should be used, and during the course of acute carditis codeine or morphine may be needed to relieve pain or cough.

Chorea has long been treated by the common sedatives—bromides, chloral and phenobarbital—and more recently by fever therapy with good results reported.

Heart failure is the one and only indication for digitalis. The dosage and method

of administration are the same here as in heart failure from any other cause. Children in general are more resistant to digitalis than adults, but seem to vary more in their response to it. Hence there is need for caution. If auricular fibrillation occurs in a child under digitalis therapy the drug should be stopped at once.

Regarding the use of the sulfonamide derivatives in rheumatic fever two points should be made clear. In the first place these drugs have been tried with unfavorable results in the acute phases of the disease. They seem to aggravate rather than to relieve the symptoms—a fact which might be construed as further evidence against a streptococcal origin. However, recent reports seem to indicate that small doses of sulfanilamide given over a long period as a prophylactic to rheumatic patients tend to prevent recurrences.

Summary

Rheumatic fever is a systemic disease of unknown etiology, probably an infection, characterized by widespread connective tissue reaction with specific lesions; by involvement of joints, heart, serous membranes and nervous system; by chronicity, remissions and exacerbations; by a tendency to permanent cardiac damage; and by striking improvement, at least of the joint symptoms, under salicylate therapy.

Abstract of Discussion

Dr. C. M. Gilmore (Greensboro): Our thanks are due Dr. Carr for giving us a comprehensive discussion of a medical problem that is becoming of increasing importance.

It is rather difficult to add to a paper that covers the subject so thoroughly and in such detail. There are a few things that we might discuss or disagree with. One is the statement that rheumatic fever is more common in the low income group. Dr. Northington said that the reason more poor people had pellagra than the other kind was that there were more poor people than the other kind. I think that applies to rheumatic fever. In my practice I don't think the infection has had any relation to the status of the patient.

In my experience salicylates are not well tolerated. Amidopyrine was one of the most satisfactory drugs I have tried, and I used it very freely over a period of years until I lost six patients from malignant neutropenia. I have never prescribed it since, even though those six patients were the only ones of hundreds or thousands who were sensitive to it.

I believe that the rheumatic fever syndrome is due to an infection with a virus that has not been isolated or properly identified. The infection tends to recur. Therefore, if we can prevent intercurrent infection and keep the patient up to a high level of vitality, we prevent fatalities, because each re-

currence of the cycle produces more general and more cardiac damage.

In the diagnosis I think the important thing is to connect up a series of illnesses which occurred, in the majority of cases, between the fifth and ninth year. After a series of acute infectious diseases we begin to get signs of cardiac involvement. Unfortunately, until recent publicity and attention were centered on rheumatic fever, we frequently missed the diagnosis and allowed the patient to get unnecessary cardiac damage because we did not recognize the disease until after weeks or months.

The first thing that should make one suspect rheumatic fever infection is the appearance of prolonged chest symptoms or low grade bronchial pneumonia, following apparent upper respiratory infection. A year ago in a series of autopsies it was found that 38 per cent of rheumatic fever patients had signs of interlobar pneumonia. Only ten of them had been in life diagnosed as having chest pathology. This means that the interlobar pleural infection or the pulmonary part of the infection is a part of rheumatic fever, probably as constant as the cardiac. Following a series of respiratory infections the next thing that should make us suspicious is the beginning of arrhythmia which is fairly constant, which persists when the child is not excited and persists after rest. This should call for sedation.

The treatment of rheumatic fever requires rest in bed for a period of months. I do not think it is fair, if the patient is old enough to understand, to let him expect to get out of bed within a week or two.

I feel that high doses of vitamins A and D during the winter season help to prevent recurrences of the upper respiratory infections. Salicylates and aspirin at times (if they are not well tolerated a little alkali can be added) do help a patient to rest and seem to have an inhibitory effect, particularly on the joint or muscular symptoms, in the cases which continue to run a low grade fever. Typhoid vaccination should be considered, although it is a major and dangerous procedure.

The Use of Digitalis in Patients With Coronary Thrombosis.—If the patient has myocardial failure with congestion, with coronary thrombosis as a cause or as an accompanying condition, digitalis should be used. Experience affords strong support for such practice. This applies to coronary thrombosis in any stage, early or late. Experimental studies indicate that animals become about 25 per cent more susceptible to digitalis after coronary occlusion. In view of this fact it is wise to employ somewhat smaller doses, about three fourths as much as otherwise, in the treatment of heart failure in patients with coronary thrombosis.—Harry Gold: *Digitalis: Its Action and Usage*, M. Ann. District of Columbia, 10:128 (April) 1941.

"Dull" Geniuses.—Liebig, the founder of physiologic chemistry, was the despair of his language teachers. At 15 he left school and was apprenticed to an apothecary because he wanted to be a chemist. At 17 he managed to enter a university and at 20 was awarded the Ph. D. degree. John Hunter, British surgeon and anatomist, left Latin school at 12 and spent four apparently idle years roaming the woods and fields, "watching the ants, the bees, the birds, the tadpoles, and caddis-worms, pestering people with questions about which nobody knew or cared anything."—Lewis M. Terman: *Psychological Approaches to the Biography of Genius*, Science, 92: 295 (October 4) 1940.

EVALUATION OF ROUTINE PROCTO-SIGMOIDOSCOPY IN GASTRO-INTESTINAL STUDY; REPORT ON THREE HUNDRED AND SEVENTY-NINE EXAMINATIONS

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Routine proctosigmoidoscopy is an important adjunct in the diagnosis of gastro-intestinal disorders, and should be carried out in all such cases. This procedure is employed in the Gastro-Intestinal Clinics of the Queens General Hospital, and this paper is a report of the findings in 379 consecutive unselected cases from these clinics. The pathological entities observed were in a majority of instances asymptomatic. Since these are entirely "refer clinics", patients suspected of having disease primarily of the ano-recto-sigmoidal region are sent directly to the rectal division of the Surgical Clinics.

Technique

Our preparation of the patient is relatively simple. The patient is instructed to take a cleansing enema of decinormal saline solution until the return is as clear as the solution injected. Upon reporting to the clinic the patient is further instructed to remain in the lavatory for no less than five minutes just prior to the proctosigmoidoscopic examination.

The ordinary examination table usually suffices. In the presence of some physical deformity one of the specially constructed tables may prove to be of advantage. The patient is placed in the knee-chest position with the spine slightly concaved, and is properly draped. The type of proctosigmoidoscope used may be left to the choice of the operator. We prefer any sigmoidoscope having the light at the outer end of the instrument and made of hard rubber. If a metal instrument is used, it is preferable to use batteries instead of house current for a source of light, so that the patient will not be shocked if the operator should forget and

attempt to turn off the current while the instrument is still inserted.

An external inspection and a digital examination of the rectum are performed. Sufficient lubrication is applied on the instrument and the proctosigmoidoscope is inserted. The obturator is removed when the rectal ampulla is reached. This can be determined by the sudden sensation of roominess for the inserted portion. Air insufflation is never used. Direct inspection is our guide for further passing of the instrument.

Interference from retained enema may be overcome by having the patient rise slowly to a knee-elbow position, thus allowing the contents to flow out through the proctosigmoidoscope. The same effect may be obtained by the use of cotton-swab absorption. Spasm can usually be overcome by swabbing the mucous membrane with a saturated solution of magnesium sulfate, and allowing a few moments for the spasm to release itself. Mucosal puckering into the instrument is usually relieved by slow and gentle pressure with a cotton swab. Obstruction by tumors, fixed proctosigmoidal junctures resulting from pelvic adhesions, strictures, and the occasional nonreleasing spasms are our indications for interrupting the examination. In the presence of these findings it is better to discontinue the procedure than for the patient to suffer untoward effects.

Data Obtained

External examination preceding proctosigmoidoscopy will reveal the presence or absence of anal excoriations, fissures, skin tags, external or protruding internal hemorrhoids, fistulas, condylomas, ulcers, tumors, hypertrophied papillae, and protruding rectum or polypi. Rectal digital examination serves the double function of dilating the anal sphincter (by gentle but firm pressure dorsally) and of determining the presence or absence of stenosis, rectal prolapse, contiguous extrinsic tumors, masses of neoplastic or foreign body origin, and impacted feces.

Observations made through the proctosigmoidoscope must be properly interpreted. Familiarity with the appearance of the normal mucosa can best be attained by frequent routine examinations. The variations of the normal are most frequently caused by the measures used in the preparation of the patient for study. The normal mucosa may

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The author hereby expresses appreciation to the Clinical Staff, particularly Dr. A. J. Cantor, Flushing, New York, for their cooperation in the preparation of this paper.

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appear from light orange to red in color. A deep red might at first glance suggest an inflammatory reaction; however, in the absence of pus, mucus, and gross bleeding in spite of gentle swabbing, the color may be considered as being within normal limits. The hypertrophic and atrophic mucosa appears not unlike similar entities of other mucous membranes. Proctosigmoidoscopy will result in identification of strictures, hemorrhoids, polypi, ulcers, inflamed crypts, tumors, hypertrophied papillae, fissures, and congenital anomalies.

At the present stage of our studies we are inclined to agree with other observers⁽¹⁾ that it is difficult to determine the disease entity represented by the ulcers examined by proctosigmoidoscope. We are still greatly dependent on the history, laboratory data, and therapeutic tests if these can be made. The ulcer of amebic colitis is usually small, and oval or round, it bleeds easily, and its walls are edematous. In contradistinction to the chronic bacterial ulcerative colitis lesions, the amebic ulcers are usually discrete, and the intervening mucosa is fairly normal in appearance. The tuberculous ulcers are frequently deep, large, and irregular, with indurated and undermined edges, and are separated by reasonably normal appearing mucosa. The malignant ulcers are usually single, deep and large, with ragged friable edges; usually no inflammatory changes of the surrounding mucosa are noted.

Polypi may be of chronic inflammatory origin or may be new growths. Swinton and Warren⁽²⁾ concluded from their study that polypi in the rectum are not the result of diffuse inflammatory processes but are true tumors. The polypi may be small to chestnut in size and single or multiple. Many authors⁽³⁾ have called attention to the familial tendency of this disease. Carcinomatous changes are more frequent in multiple polypi than in the solitary or scattered variety. In-

cluded in the series reported later in this presentation is a male adult, 31 years of age, who was afflicted with a solitary polyp of the rectum. Malignant changes had developed (proven on biopsy). When proctosigmoidoscopic examination was made immediately prior to intended operation, it was found that spontaneous amputation with apparent expulsion of the polyp had occurred since the preceding examination. The patient's brother was in another hospital for the treatment of carcinoma of the rectum. Our patient has had no recurrence for about two years, but is at this writing hospitalized for a bleeding duodenal ulcer. Another solitary polyp, at 18 cm., with clinical malignant changes, was observed in a middle aged female in our series.

The malignant ulcer has been previously described. The carcinomatous mass may be annular or oval with an overgrowth of tissue somewhat resembling a cauliflower. Since this mass is friable, bleeding is the rule, and not infrequently a section for biopsy can be obtained with a cotton swab. Stenosis may develop in the late stages of this disease.

Report of Cases

In the course of routine proctosigmoidoscopic examinations on 379 consecutive unselected cases in the Queens General Hospital Gastro-Intestinal Clinics, 149 patients were found to have ano-recto-sigmoidal disease. The remaining 230, or 60.6 per cent, presented none of the pathological conditions.

TABLE 1

Number free of pathology	230	60.6%
Number with pathology	149	39.4%
Total cases studied	379	100.0%

Since these are entirely refer clinics, patients suspected of having primary disease of the ano-recto-sigmoidal region are not sent to the Gastro-Intestinal Clinics. Of the 149 patients with pathology, 78 or 52 per cent either had none of the usual symptoms or had them to such a slight degree that they were not reported by the patients during the course of thorough history interrogation. Not infrequently we find patients reluctant to answer questions concerning that portion of the anatomy. It is, therefore, our practice when progressing to that part of the history first to make inquiry relative to the presence of blood in the feces. This question is of

- (a) Paulson, M.: Rectosigmoidoscopy in Infancy and in Childhood—A Nonsurgical Procedure, *Am. J. Dis. Child.* 52:1430-1444 (December) 1936.
- (b) McWhorter, G. L.: Importance of Sigmoidoscope in Diagnosis of Disease in Terminal Colon and Rectum, *J. A. M. A.* 70:1365-1368 (May 11) 1918.
- (a) Swinton, N. W. and Warren, S.: Polyps of the Colon and Rectum and Their Relation to Malignancy, *J. A. M. A.* 113:1927-1933 (November 25) 1939.
- (a) Doering, H.: Die Polyposis intestini und ihre Beziehung zur carcinomatösen Degeneration, *Arch. f. klin. chir.* 83:194-227, 1907.
- (b) Kennedy, R. L. J. and Weber, H. M.: Polyposis of the Colon in Children, *Am. J. Dis. Child.* 42:69-76 (July) 1931.
- (c) McKenney, D. C.: Multiple Polyposis of Colon; Familial Factor and Malignant Tendency, *J. A. M. A.* 107:1871-1876 (December 5) 1936.

sufficient significance to the patient to result invariably in a positive or negative reply. Henceforth the path is usually cleared for further interrogation pertaining to the ano-recto-sigmoidal region.

TABLE 2

Observed Lower Bowel Pathology	Asymptomatic (78 cases)	Symptomatic (71 cases)	TOTAL (149 cases)
Hemorrhoids	27 Int. 13 Ext. 8 Both	14 Int. 16 Ext. 12 Both	42 90
Sigmoiditis	1	2	3
Proctitis	2	1	3
Proctosigmoiditis	2	6	8
Reduplication of mucosal folds	2	9	11
Atrophic appearing mucosa	5	3	8
Congested mucosa	5	4	9
Hypertrophy of mucosal folds	2	0	2
Skin tags without other pathology	2	0	2
Rectal prolapse (moderate)	2	1	3
Fistula in ano	3	1	4
Hypertrophied papillae	3	2	5
Polypi	2	3	5
Polypi clinically malignant	0	2	2
Fissures	1	1	2
Spasms without other pathology	3	1	4
Kinked proctosigmoid (fixed)	1	1	2
Chronic ulcerative colitis	1	1	2
Cryptitis	0	1	1
Clinical proctosigmoid cancer	0	2	2
Pilonidal cyst	1	0	1

NOTE.—Several of the patients had more than one of the above disease entities.

Table 2 illustrates the fact that a large number of the pathological entities can be diagnosed without the use of the proctosigmoidoscope. Nevertheless, as the table indicates, the addition of this instrument to the armamentarium has greatly increased our diagnostic capacity. McWhorter^(1b) in reporting 22 cases of carcinoma of the rectum and rectosigmoid states that only one was located beyond the reach of the proctosigmoidoscope. The same author says that W. J. Mayo observed that in 100 consecutive cases of carcinoma of the rectum and rectosigmoid 63 per cent involved the rectosigmoid region. These could not have been seen without the aid of the proctosigmoidoscope.

TABLE 3

AGE INCIDENCE OF ANO-RECTO-SIGMOID DISEASE									
Decade	2nd	3rd	4th	5th	6th	7th	8th	Total	Per-cent.
Females	8	22	30	19	8	2	0	89	59.7%
Males	3	13	17	12	12	2	1	60	40.3%

We shall not endeavor in this report to explain our findings, but it is noteworthy that the incidence of pathological conditions in our series was greatest in the females during the third, fourth, and fifth decades. The males were affected most often from the

third to and including the sixth decade. The fourth decade gave the highest incidence of pathological entities in each sex. Of the 149 cases 59.7 per cent were females and 40.3 per cent were males.

TABLE 4

AGE INCIDENCE OF HEMORRHOIDS									
Decade	2nd	3rd	4th	5th	6th	7th	8th	Total	Per-cent.
Females	5	13	18	14	3	1	0	34	60%
Males	1	6	9	8	10	2	0	36	40%

Of the 90 cases of hemorrhoids, 45.5 per cent were internal, 32.2 per cent were external, and 22.2 per cent were both internal and external. In 53.3 per cent of the patients the hemorrhoids were asymptomatic. One can only speculate as to the consequence in these 48 asymptomatic cases if they had gone undiagnosed and untreated. In Montague's report of 188 cases⁽⁴⁾ there is practically a complete reversal of the percentages found in our series for the two sexes. The fourth decade in his series, as in ours, was the period when hemorrhoids were most frequently found.

Conclusions

1. Routine proctosigmoidoscopy during the study of gastro-intestinal cases is advocated.
2. A general discussion of the technique and data obtained is presented.
3. In the course of routine proctosigmoidoscopy on 379 patients, 149 cases were found to have ano-recto-sigmoidal disease. Of this number 52 per cent were without symptoms suggesting pathological entities of these parts. Of the 149 cases 59.7 per cent were females and 40.3 per cent were males. In the fourth decade disease was most commonly observed. Four cases that were clinically malignant were found early enough to institute probably curative treatment.
4. Ninety cases of hemorrhoids were included in the series reported. Of this number 53.3 per cent were asymptomatic. The ratio between the sexes was 3 females to 2 males, and 30 per cent of cases occurred during the fourth decade.

8415 Beverly Road.

1. Montague, J. F.: Hemorrhoids, ed. 2, Philadelphia, J. B. Lippincott Co., v. 3.

Moderation—The keynote of all advice to the healthy aging or aged patient is: moderation in all things—in work, play, exertion, food and drink. Much mischief may be done by sudden and radical curtailment of such habits as the use of tobacco, alcohol or coffee.—Edward J. Stieglitz: The Potentialities of Preventive Geriatrics, New England J. Med. 225:253 (August 14) 1941.

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DECEMBER, 1941

A HUMBLE APOLOGY TO THE FARMERS

An editorial in last month's issue, "Pater-
nalism With a Vengeance", made the state-
ment that "a jury of Kentucky farmers de-
cided that the leading tobacco companies of
the country were guilty of a criminal com-
bination in restraint of trade." This state-
ment, we have since learned, is not true.
There was not a single farmer on the jury.

The author of the editorial was born and
partly reared in the country; his ancestors
for many generations were farmers; many
of his relatives and best friends are farmers;
and he has the highest regard for farmers.
He regrets exceedingly that he was misled
into making such a completely false state-
ment, and humbly begs the pardon of every
farmer—not only in Kentucky, but in the
whole world—for suggesting that a jury of
farmers would be guilty of such a travesty
on justice.

HOSPITAL SAVING ASSOCIATION ADDS SURGICAL AND OBSTET- RICAL SERVICE

A letter sent to the doctors of the state,
dated November 4, announced that "By
reason of a growing demand from indus-
trial groups and others and the increasing
pressure from the commercial insurance
companies, the Hospital Saving Association
has ventured to add to its hospitalization
program surgical and obstetrical services.
The proposal was approved by the Medical
Society at its Pinehurst meeting and the fee
schedule was approved by a representative
committee of physicians and surgeons with
the reservation that in the contract with its
members the Association state that the pay-
ment is *towards* (in part payment of) the
professional fee and is made directly to the
attending physician or surgeon. This pay-
ment will be made on or before the 10th of
the month following the receipt of the bill.

"In working out this program the officers
of the Association have adhered strictly to
the policy of (1) free choice and (2) non-
interference with the "patient-doctor" re-
lationship. The Association is not a third
party, but is undertaking to make it possible
for the low wage groups to obtain surgical
and obstetrical service through community
or group co-operation and to pay for it on a
fair basis."

Those present at the meeting of the House
of Delegates last May will recall that Dr.
Manning was given the "go ahead" signal
to set up this innovation only after a pro-
longed debate. Even those who voted for it
did so with a full realization of its implica-
tions, and with the feeling that unless it was
handled carefully it might be a long step
toward socialized medicine.

The arguments for the adoption of this
new service are given in the paragraphs
quoted above. Of far greater weight than
these arguments, however, is the confidence
that the members of the Medical Society of
the State of North Carolina have in the in-
tegrity, the ability, and the common sense
of Dr. Manning. Even though the Delegates
were conscious of the possible pitfalls, they
felt that he would avoid them, and that he
would never betray the trust of his fellows.

DR. ROBERT RANDOLPH JONES, JR.

Suddenly, at the hand of a patient whom he had tried to serve, Dr. Robert Randolph Jones, Jr. met his death on the evening of November 18, 1941. Thus, at the age of 39, abruptly ended the career of one of the country's finest young surgeons.

Dr. Jones had been a member of the Surgical Department of the Duke Hospital since its opening in 1930, and since 1934 had been Assistant Professor of Surgery in the Duke University School of Medicine. Although he was active in all branches of general surgery, his special interest lay in plastic surgery, in which field he was fast gaining a national reputation.

His sympathetic heart, his jovial disposition and his untiring effort to help anyone who cared to lay his problems before him endeared him to all who knew him. His students looked upon him with an affection that was engendered by the deepest confidence and respect. His patients worshipped him for the gentle, painstaking, and thorough care with which he ministered to them. His colleagues loved him for his genial good will, his steadfast honesty and loyalty, his wholesome philosophy and Christian spirit, his unselfish devotion to his profession, and the judgment and skill with which he practiced his art. To all who knew him, his sudden and tragic death came as a stunning blow.

Dr. Jones was born in Newport News, Virginia, on October 17, 1902, the son of Robert Randolph and Sally Orgain Blackwell Jones. He received his early education in the public schools of Petersburg, Virginia and El Paso, Texas. He entered Davidson College in 1920, and graduated in 1924. While in college he became a member of Pi Kappa Alpha social fraternity. In his senior year, he was president of his class and was elected to membership in Phi Beta Kappa honorary scholastic fraternity.

In 1924 Dr. Jones entered the Johns Hopkins University School of Medicine. During his senior year, he was elected to Alpha Omega Alpha honorary medical scholastic fraternity. As a medical student he was initiated into the Alpha Kappa Kappa medical fraternity. He graduated from Johns Hopkins in 1928, and served as a house officer in the Strong Memorial Hospital, Rochester, New York, during 1928 and 1929, and in the Johns Hopkins Hospital during 1929 and 1930. From 1930 to 1932 he was Assistant

Resident in Surgery at the Duke Hospital, and from 1932 to 1933 he was Resident in Surgery. From 1933 to 1934 he was Instructor in Surgery, and since 1934 he had been Assistant Professor of Surgery in the Duke University School of Medicine.

He was a member of the Durham-Orange County Medical Society, the American Medical Association, and the American College of Surgeons, and had been certified by the American Board of Surgery. Since 1939 he had been educational director for North Carolina of the Women's Field Army of the American Society for the Control of Cancer.

ANOTHER RECORD BROKEN

The month of October, 1941, established another record for North Carolina—one that is to our lasting shame. In street and highway accidents 161 men, women and children were killed. The previous "high", established last October, was 139. Many more were injured by the automobile, some crippled for life.

A few years ago an epidemic of poliomyelitis created a wave of almost hysterical excitement. Experts from the United States Public Health Service came to lend their aid in fighting it. Yet there were only 72 deaths in North Carolina for the whole year—less than were killed in one month by the automobile.

Is it not high time that something was done to curb this steadily increasing menace to the lives of our people? Other states and communities have attacked the problem seriously, and have gotten results, reflected in lowered mortality. Must we be satisfied with our present unenviable position in traffic control?

Various solutions of the problem have been offered: wider highways, more highway patrolmen, more drastic punishment for traffic violations, and Dr. Northington's suggestion of permanent governors on all cars that would hold the speed down to fifty miles per hour or less. Perhaps several of these methods are necessary; certainly *something* is needed. The terrific tax toll levied by the state from those who own automobiles is sufficient to warrant the employment of enough expert advice to study the question seriously, and the adoption of such measures as are deemed necessary to protect the lives of our people.

THE MENACE OF MINERAL OIL

For many years mineral oil has been used extensively as an "intestinal lubricant". Since it costs only four cents a gallon⁽¹⁾ to produce, those interested in its manufacture and distribution have realized a good profit, even at the reduced rates at which it is offered in "one cent sales" and bargain day specials. It is unfortunate that the medical profession had much to do with popularizing its use by the laity. It must be admitted that the first arguments used in its favor were quite convincing; but, like so many other remedies, it has been weighed in the balance and found wanting. Its laxative qualities are so feeble that it was soon reinforced by phenolphthalein, cascara and other irritants, or mixed with such bulk-producing substances as agar to produce "emulsions".

One of the first indications that this lubricating process is not ideal—aside from the annoying habit it has of leaking through the anal sphincter between one's regular "habit times"—was the discovery that it robs the system of vitamin A by absorption from the intestinal tract⁽²⁾. Other complaints have been registered against the use of liquid petrolatum from time to time, but it remained for Dr. James W. Morgan, of San Francisco, to administer the *coup de grace*, in the Panel Discussion on Drug Therapy in the Alimentary Tract at the Cleveland meeting of the American Medical Association⁽³⁾. This article sums up admirably the indictment of this form of medication, and should be read by every practitioner of medicine. Dr. Morgan charges that in addition to creating a vitamin deficiency, liquid petrolatum interferes with digestion and so predisposes to malnutrition; that it may cause pruritus ani; and that it causes a definite syndrome, which he calls mineral oil poisoning. "The most frequent symptoms are anorexia, indigestion, flatulence, nervousness, and anal leakage. Many have suffered weight loss of from 10 to 60 pounds. . . . It would not be too unfair to say that in some respects liquid petrolatum has earned its niche in the section of toxicology rather than in pharmacology."

1. Morgan, James W.: The Harmful Effects of Mineral Oil (Liquid Petrolatum) Purgatives, J. A. M. A. 117: 1338 (October 18) 1941.

2. Eddy and Dalldorf: The Avitaminoses, ed. 2, Baltimore, Williams and Wilkins, 1941, p. 95.

3. Morgan, James W.: The Harmful Effects of Mineral Oil (Liquid Petrolatum) Purgatives, J. A. M. A. 117:1335 (October 18) 1941.

DR. HUBERT ROYSTER—SEVENTY YEARS YOUNG

There are times when a trite expression is so appropriate that nothing new will serve as well. On November 19 Dr. Hubert Royster celebrated his seventieth birthday by a dinner given for the Raleigh Academy of Medicine. Papers were presented by his two sons, Henry and Hubert, Jr., both of Philadelphia, and by his nephew, Dr. Chauncey L. Royster, of Raleigh. The Academy presented Dr. Royster with a handsome chair and a new neon-light desk lamp.

It is hard to realize that one whose mind has been kept youthful by constant exercise and whose eyes are always to the front was a pioneer surgeon in North Carolina. Trite though it be, the one toast that must be given is: Here's to Dr. Hubert Royster—seventy years young.

* * * *

THE HAWAII MEDICAL JOURNAL

The new baby of the family of state (and territorial) medical journals made its appearance in September. It is a fine looking specimen, and promises well for the future. Published by the Hawaii Territorial Medical Society and edited by Dr. Lyle G. Phillips, Editorial Director, and Dr. Harry L. Arnold, Jr., Editor, the *Hawaii Medical Journal* is to be issued bi-monthly. The leading editorial in its first number states that "the dissemination of knowledge is one task to which the Journal is dedicated, — not especially generalized knowledge of the sort which can be gained from perusal of the old established national medical journals, but more particularly knowledge pertaining to medicine in Hawaii, that all in our profession here and others who may care to read may know what are our problems and what is being done to solve them." If volume 1, number 1 is an indication, the *Hawaii Medical Journal* will fulfill this task to which it is dedicated in a manner worthy of praise.

THE NORTH CAROLINA MEDICAL JOURNAL, now graduated to the rank of "next to the youngest", welcomes gladly its baby brother, the *Hawaii Medical Journal*.

CASE REPORTS

CLINICO-PATHOLOGICAL CONFERENCE

CITY MEMORIAL HOSPITAL

WINSTON-SALEM

Presentation of Case

DR. MILES (reading the clinical summary): Mr. A. M. C., a 38 year old white male, was admitted to the City Memorial Hospital September 2, 1941, with the chief complaint of pain of severe colicky nature in the right flank radiating to the chest and both costal margins. This pain had started several days prior to admission and had improved greatly before the patient was seen at the hospital. The physician called to see him had found that he had hypertension and albuminuria.

The history revealed no previous illness. There was no history of asthma. No family history was elicited.

The physical examination on admission revealed a well developed, well nourished man appearing moderately ill. The temperature was 99.2 F., the pulse 84 and the respirations 20. The blood pressure was 154 systolic, 90 diastolic. The heart and lungs were "negative" and the only positive finding was slight tenderness in the left costovertebral angle. No masses or organs were palpable in the abdomen. There was no muscular spasm. There was slight pretibial edema.

The urine was acid, with a 3 plus reaction for albumin, and no sugar. The microscopic examination showed many hyaline and fine granular casts, rare white blood cells, rare red blood cells, occasional epithelial cells, a moderate amount of debris and sulfanilamide crystals. There were 5,300,000 red blood cells, 14.5 Gm. of hemoglobin, and 10,400 white blood cells. The differential count showed 2 per cent eosinophils, 4 per cent stab, 64 per cent segmented polymorphonuclears, 29 per cent lymphocytes, and 1 per cent monocytes.

An x-ray film of the chest showed a cloudiness in the left costophrenic angle due to a thickened pleura, and extending up the lateral wall. There was probably some pleuritis in the right cardiophrenic angle. In the base of each lung there was evidence of a chronic inflammatory process of unknown etiology. A flat film of the abdomen

showed a mass 23x13 cm. in the region of the left kidney.

On September 4, with the temperature, pulse and respirations normal, a cystoscopy was done. The bladder and ureteral orifices were inflamed. Catheters were passed without obstruction and clear urine drained from each kidney. Indigo carmine appeared in five minutes from the right and in six minutes from the left. X-ray films showed no abnormalities of the kidneys, ureters or bladder.

The urine from the right kidney showed one or two white cells, and two to four red cells; from the left kidney, three or four white cells and one or two red cells.

On September 8 the patient developed pain in the left chest on respiration. This was of moderate intensity, and was somewhat relieved by strapping. The temperature was 102.8 F., the pulse 100 and the respirations 22. The following day dullness on percussion, bronchial breath sounds and coarse rales were found over the base of the left lung posteriorly, with pectoriloquy above this area. X-ray showed a dense uniform clouding of the left base believed to be lobar pneumonia of the entire lower lobe. The white blood count was 17,000 with 85 per cent granulocytes. A sputum smear showed a moderate number of Gram positive cocci in pairs and chains.

The patient was put on sulfadiazine, and a blood level of 11.6 mg. was maintained for five days. In four days the temperature gradually fell from 102 F. to 100.2 F. The patient showed very little toxicity considering the extent of lung involvement. He coughed up a moderate amount of red bloody sputum, and complained of recurrent soreness in the chest.

On September 13 an x-ray film showed uniform density of the entire left lung. On September 15 the temperature rose to 102 F. but gradually fell after sulfadiazine was replaced by sulfanilamide because of nausea. The patient continued to have some soreness in the chest but no respiratory distress.

On September 17 the temperature was 100.6 F., the pulse 24, and the respirations 24. There was little change in the patient's condition, until he suddenly had a severe attack of painless dyspnea, with wheezing expiration. His face was "ashy gray" and his extremities were cold; there was generalized sweating and rapid pulse, and the lungs were

full of coarse, moist rales. He was given morphia, adrenalin and coramine but grew steadily worse and died in fifty minutes.

Differential Diagnosis

DR. R. L. McMILLAN: This man was apparently in perfect health up until about two weeks before he was admitted to the hospital. I saw this man in consultation. He told me that two weeks prior to his admission to the hospital he had had odd upper abdominal pains that came sporadically, were rather sharp, and seemed to radiate around the costal margins. He went to see his doctor and was found to have a 4 plus reaction for albumin, a large number of hyaline and granular casts and red blood corpuscles in his urine, and a moderate grade of hypertension. All of these findings are characteristic of Bright's disease. The only inconsistency is the bouts of pain that he was having and the kidney colic which he had just a few days before he came into the hospital. I presume that that was the reason for the cystoscopic examination. I feel that these bouts of pain had something very definite to do with the terminal illness and possibly with the primary illness. According to the retrograde pyelograms, which are, I believe, about 90 per cent accurate, the kidney pelves and kidneys were not infected. I think that a congenital anomaly of the kidney, a renal tumor, and such conditions can be ruled out by the retrograde pyelogram, although this would not eliminate Bright's disease.

About four days after the cystoscopic examination, this man had pain in the left lower chest anteriorly. He told me that the pain was not unlike the pain he had previously experienced, except in intensity. It was in the left lower chest antero-laterally, just at the anterior axillary line, and soon spread over the entire left lower chest. He was strapped at the time I saw him, and was coughing up bright red blood mixed with some mucus. It was not the rusty sputum characteristic of pneumonia, although bacteria were found in it. I could not definitely differentiate between a lobar pneumonia and an infarction of the lungs; however, I leaned much more strongly toward an infarction. I felt that sulfadiazine should be continued for the next twenty-four hours, and if there was no definite improvement should be changed to sul-

fanilamide. Whether the streptococci came from the throat or from the sputum was hard to decide, but we had every reason to believe that it came from the lungs or the bronchial tree. At that time the patient had a great deal of dyspnea and cyanosis, but he was not acutely ill. He did not have the intoxication of pneumonia, and he did have a sign that I have seen in patients with infarction of the lungs—namely, exquisite tenderness on percussion. The slightest touch would make him jump. Furthermore, he ran a very low-grade fever to have an entire lung consolidated with streptococcus pneumonia. I felt that if he had had a streptococcus pneumonia he would have died sooner. Associated with this type of pneumonia is the production of a sputum that sometimes becomes quite watery. I don't think he had a pneumonia of the type that was seen in 1918. Until the time of his death he continued to have bouts of upper abdominal pain and was extremely distended. There was probably a small amount of fluid at the time I examined him. I should like to see the x-rays now.

DR. J. C. RODICK: We saw this patient first on September 3. The right kidney shadow was partially obscured by intestinal contents. The lower pole was normal and the psoas muscle well defined. On the left there was a shadow which measured 23x13 cm., with the outline of a kidney. The psoas muscle shadow was wiped out, and I took it for granted that the shadow noted was the kidney. On the following day a pyelogram was made. The large shadow in the left had disappeared and both pelves and calyces were perfectly normal, and the ureters were normal. The large shadow was probably bowel.

On September 3 we made a chest film. At that time there were changes of a fibrotic nature in the right base, probably from some long forgotten infection. There was a strip of soft tissue density in the left costophrenic angle—evidence of a recent pleuritis. There was also a spot of lesser density which represented an area of infiltration in the base of the left lung. On September 9 the entire lower left lobe showed increased density, the upper lobe being normal except for a thickening of the pleura. There was no definite pleural change on the right, but the lung showed small areas of infiltration. On September 13 the entire left lung was opaque

and the small areas on the right had increased. The heart shadow was increased in size; we were inclined to believe that this increase was due to dilatation rather than to pericardial effusion.

DR. E. L. GILBERT: Isn't an effusion apt to cause enlargement to the right?

DR. J. C. RODICK: The enlargement may occur on either side and is triangular in shape.

DR. E. S. AVERY: There is a little bulge in the left ventricle, is there not?

DR. J. C. RODICK: That is a little larger in the second film than in the first, and slightly larger in the third than in the second. There is no effusion, apparently only dilatation. The cardiac angle is too sharp for pericardial effusion.

DR. R. L. McMILLAN: Dr. Rodick did not comment on the x-ray differentiation of pneumonia and infarction. It is almost impossible to differentiate them, even with lateral, oblique and postero-anterior exposures. I have the feeling that this man, even two weeks previous to admission to the hospital, was having small pulmonary emboli, and that after he came into the hospital he had a large one. Supposing that he had these emboli, let us try to trace the source of them. It is not possible to have an embolus to the lung from the portal circulation. Such emboli would stop in the liver. The only other source is the caval circulation. There was slight puffy edema of the legs and some generalized edema, but no phlebitis. There was no unilateral swelling of the legs. A source which is not obvious in the examination of a patient is one of the deep veins that run down to the buttocks and iliac veins. Another possibility is some venous anomaly of the renal veins. This might possibly tie up with the lesion of the kidney and explain the urinary findings and hypertension. It would be of very great help to know if albumin were coming from both kidneys or from just one. If albumin were coming from only one kidney, that would be suggestive of some thrombotic lesion of the renal veins. I have seen two patients with numerous thrombi collected in the right auricle and some in the right ventricle who met sudden death, as this man did. We have no positive proof of the source of these emboli. I believe that he had a pulmonary embolus, probably several emboli involving both lungs, mainly the left lung and

the left branch of the pulmonary artery, and that he had either multiple small thrombi in the right side of the heart or a large embolus blocking the pulmonary circulation to the right lung.

DR. E. S. AVERY: Was his heart all right when you examined him?

DR. R. L. McMILLAN: It was very moderately enlarged at that time. This enlargement could have resulted from the original obstruction to the left main pulmonary artery, a type of cor pulmonale. The right auricle and right ventricle would be dilated.

DR. J. C. P. FEARRINGTON: How about an ileus to explain the x-ray density? It is a physiological tumor.

DR. J. C. RODICK: An ileus or any type of obstruction would give air in the bowel.

DR. W. L. GRIMES: An accumulation of intestinal contents in the colon in that region would give that kidney-shaped shadow if the patient had had enemas between the first two plates.

DR. J. C. RODICK: I believe the shadow was intestine—small bowel. It disappeared too quickly to be anything else.

DR. R. L. McMILLAN: If this man had Bright's disease, he did not have it very long. The urinary findings were characteristic of some venous disease in the kidney. I am guessing that it is in the left kidney.

DR. E. V. BENBOW: This man came in with pain in the right flank. The next time he had pain it was in the left costovertebral angle. An embolus somewhere in the intestine in the right lower abdomen could have caused that pain in the right flank. Another embolus in the spleen could have given him the pain in the left costovertebral angle. At times he complained of distention and abdominal pain. These could be accounted for by emboli elsewhere in the intestinal tract. Emboli originating in the portal circulation or vena cava would not account for the abdominal pain. They would have been caught in the liver and in the lungs. It seems to me that an endocarditis on the left side is the most logical explanation of the origin of his emboli.

DR. T. T. FROST: How can you explain the pneumonia?

DR. E. V. BENBOW: Infarcts around where the emboli lodged could simulate pneumonia.

DR. R. L. McMILLAN: An endocarditis on the right side of the heart is very rare.

DR. E. V. BENBOW: There is a possibility of a patent foramen ovale.

DR. S. S. MILES: The heart was normal.

DR. R. L. McMILLAN: When I examined him his heart was rapid, with a slight gallop rhythm.

DR. E. L. GILBERT: Was an electrocardiogram done?

DR. R. L. McMILLAN: No. We were more concerned about the condition in his lungs.

DR. F. K. GARVEY: This man was sent in with "kidney disease", and his abdomen was distended. He complained of pain in the left lower chest. I was told that he had had a right kidney colic. He had no signs of renal colic or of renal disease when I first saw him. There was some generalized abdominal distention. He was given enemas and prostigmine to relieve the distention before the first x-ray was made.

Dr. McMillan's Diagnosis

Multiple pulmonary emboli with infarction—origin undetermined.

Clinical Diagnosis

Lobar pneumonia.

Acute glomerulonephritis.

Anatomical Diagnosis

Thrombosis of the left spermatic vein with extension along the left renal vein, involvement of the vena cava and propagation into the right renal vein.

Multiple pulmonary emboli with infarction arising from vena caval thrombosis.

DR. T. T. FROST: At autopsy we found multiple infarcts of the lungs corresponding to the shadows seen in the x-ray. In both main branches of the pulmonary artery large emboli were found which effectively occluded the pulmonary circulation. These emboli arose from a large thrombus in the vena cava at the site of the renal vein, extending into both renal veins and into their tributaries throughout both kidneys. At the time of autopsy both kidneys and the inferior vena cava were removed and preserved to be photographed and drawn. It was not until this afternoon when going over the specimens that I discovered that the thrombus extended into the spermatic vein on the left, and sections from this area reveal that the thrombus is oldest at this point and is beginning to undergo organization. The remainder of the spermatic vein and its tributaries were not examined because of

the lateness of this discovery. It is quite possible that this man had an injury to his testicle or a varicocele which resulted in an ascending thrombosis of his spermatic vein, with propagation of this thrombus into the renal arteries and vena cava. His kidneys showed a very marked passive congestion and cloudy swelling, but there is no evidence of either glomerulonephritis or arteriolar nephrosclerosis. The urinary findings must be considered the result of the extremely severe congestion of the kidneys.

MEDICOLEGAL ABSTRACT

J. F. Owen, M.D., LL.B.
Raleigh

Insurance: In construing double indemnity clauses in life insurance policies, the terms "accidental death" and "death by external accidental means" are not synonymous.

This suit was instituted by the wife, who was also the administratrix of the deceased, to recover under the double indemnity provision of a life insurance policy. Her husband, while in a hospital for treatment of a chronic inflammatory condition of the gallbladder, agreed to submit to an operation. A spinal anesthetic was administered. Shortly after its administration and before the operation was begun the patient complained of shortness of breath, and his respiration became graduated and shallow. Notwithstanding the efforts of the doctors his respiration became gradually paralyzed or anesthetized, and the patient died. The spinal anesthetic was of a kind approved by the medical profession, and it was administered under suitable circumstances in the usual way. It was also the ordinary dose as to volume and amount, and the point at which the injection was made in the subarachnoid space was the point ordinarily used for such injections. The force used was not unusual and the instruments used were the proper ones. There is information in the records showing that the specific gravity of the type of anesthetic utilized was such that the farther the head was lowered the more readily the fluid would reach the respiratory center; and the evidence showed that after the patient's respiratory system began to fail, his head, probably because of the excitement incident to the emergency, was lowered still farther.

The provision in the policy upon which suit was instituted is as follows: "The company will pay the beneficiary double the face amount of this policy upon receipt of due proof that the death of the insured occurred, independently and exclusively of all other causes, from accidental drowning or as a direct result of bodily injuries effected through external, violent and accidental means, where there is a visible contusion or wound on the exterior part of the body."

At the close of the evidence for the plaintiff, the Court, on motion of the defendant, dismissed the action and entered judgment as of nonsuit. The plaintiff excepted and appealed.

When this case came before the Supreme Court, the Justice writing the opinion felt that whether the plaintiff could recover or not depended entirely upon the definition of the words "accidental death" and "death by external accidental means". The Court, it seems, had already adopted the view that

there is a distinct difference in the meaning of the two terms and that the coverage in the policy is materially affected by the use of one or the other. According to the authorities "accidental" means that which happens by chance or fortuitously—unexpected, casual, unforeseen and without design—, whereas "accidental means" refers to that which produces results and not to the result itself. Death by "external accidental means" indicates that death is unforeseen and unexpected, also that the means motivating and causing death are unusual, unforeseen and occur by chance. In this particular case, in addition to the usual and expected sedative effect of the anesthetic injected into the spine of the deceased, there appeared an unexpected result due to the collapse of the respiratory system. The "means", however, was not accidental, but was voluntarily authorized and was intentional. The plaintiff contended that she had offered evidence showing that the head was accidentally and unintentionally lowered during the emergency when the respiratory system began to fail, and she asserted that this further increased the risk and caused death. This line of reasoning, the Court stated, could not be sustained, inasmuch as there was no contusion or wound on the external part of the body caused by lowering the head. The plaintiff also attempted to bring the case within the provisions of the policy by contending that the place of injection of the anesthetic showed evidence of external violence. The Court indicated, however, that there was no causal connection between the wound resulting from the injection and such death by accidental means. The injection was voluntarily made with the full consent of the deceased and death was caused by circumstances which arose after the injection was made. The judgment of the Superior Court in this case was affirmed. (North Carolina Supreme Court, v. 220, p. 148. Decision rendered fall term 1941).

CORRESPONDENCE

Roanoke Rapids, N. C.
Nov. 28, 1941

To the Editor:

I want to express my disapproval of your editorial entitled "Paternalism with a Vengeance" in the November number of the JOURNAL.

It is all right for you, living in Winston-Salem, to defend the big tobacco companies, but I resent the Democratic Party being called by you the "National Socialist Party of the United States", and I also resent the terming of the United States Department of Justice as the so-called "Department of Justice". I am sure you are not expressing the majority opinion of the doctors of North Carolina in this editorial.

I request this letter be published in the next copy of the JOURNAL.

Yours very truly,

JOHN W. MARTIN, M.D.

The NORTH CAROLINA MEDICAL JOURNAL belongs to the Medical Society of the State of North Carolina, and expressions of opinions from its readers are always welcome, whether pro or con. While the journal is absolutely non-partisan and non-political, its editorial board feels that it has the right to discuss any matters that concern organized medicine. There was such a striking similarity between the trial of the tobacco companies and that of the American Medical Association—the officials of each being tried on the criminal charge of conspiring in restraint of trade—that it seemed quite in order to call attention to the analogy.

Whether or not the present party in power deserves to be called the "National Socialist Party" is a matter of opinion; but a comparison of the platform of the Socialist party in 1932 with the achievements of the present administration will show that virtually every tenet of the Socialists has been incorporated in the New Deal. A veteran Socialist remarked before the close of the first Roosevelt term that he had lived to see every principle of his party put into practice.

A careful study of the methods employed by the Department of Justice in both the trials under discussion, as well as in other instances, certainly leaves room for question as to whether Mr. Thurman Arnold has sought to prosecute or to persecute the victims of his displeasure.

BULLETIN BOARD

PRESIDENT'S MESSAGE

The enactment of the Workman's Compensation Law marked a distinct advance in social legislation. In principle it is sound and its objects commendable.

Unfortunately the administration of the law leaves much to be desired and has caused suspicion and strife to the detriment of those whom it was intended to benefit.

The enactment of the bill reduced greatly the financial returns to the physicians. Naturally physicians or anyone else dislike to have their income reduced.

However, the profession as a whole recognized the wisdom of such legislation and adapted itself to cooperate and work in harmony. Stripped of its legal phraseology this

law meant that when a workman was injured, the attending physician could be sure that he would receive a definite fee as shown in a schedule, even though the fee was considerably less than he had been receiving previously for similar services.

There is in reality a definite contract between the State of North Carolina and the physicians. It is just as binding as a contract between the State of North Carolina and merchants for coal at certain prices. When that coal has been delivered, the merchants have every right to expect payment according to the contract. When medical services have been rendered, the doctors have every right to expect payment according to the contract.

The Industrial Commission has assumed the right to violate the spirit of the contract and to pay whatever amount it sees fit.

It is possible, even probable, that the Commission was given the power to reduce a bill in order to handle an occasional, exceptional case. Certainly when the law was enacted, and accepted in good faith by both sides, no one dreamed that that power would be abused by the arbitrary and wholesale cutting of legitimate bills.

It has been stated by the Commissioners that some doctors over-charged, or "padded" their bills, and therefore the Commission reduced them.

If that be true, then those particular doctors should have been exposed and the medical profession would have backed up the Commissioners.

Is it fair that the clergy as a whole should be condemned and penalized because of an occasional wayward member?

Is it right that one hundred innocent hostages should be sacrificed as a retaliation for the death of one German officer? Is it right that there should be wholesale and indiscriminate penalizing of the whole profession as a reprisal for the sins of a few?

There appeared in print the statement to the effect that last year more was accomplished by the Commission at a lower cost than previously, implying an efficient and economical administration. To some extent and possibly to a large extent, this accomplishment of which the Commission is proud has been achieved by treating a bona fide contract as a "scrap of paper".

Examples of gross injustice to the physicians and to the hospitals could be cited *ad infinitum, ad nauseam*.

I will give but one example which occurred in my practice. A bill was rendered and in due time a check was received for a greatly reduced amount without any explanation. In reply to my letter of inquiry as to the reason for the reduction, I was informed that no objection had been raised to the necessity for the services rendered, the number of visits, or the amount of the bill, but that funds were low and therefore some of the bills had to be prorated.

I then wrote calling attention to the fact that there was a distinct contract between the State and me for the payment of the bill, since I had fulfilled my part of the contract, and that there was also a contract between the State and the Commissioners for payment for their services, a contract no more sacred or binding than the one with a physician. Therefore in view of the limited funds was the compensation for their services prorated?

I received neither a reply to my letter nor the unpaid amount of the bill.

What is sauce for the goose is not sauce for the gander.

At the last meeting of our State Society a committee headed by Dr. Joseph A. Elliott of Charlotte was appointed to confer with the Governor. This committee received a fair and apparently sympathetic hearing from Governor Broughton, who instructed the Commission as follows:

- (1) Approve all bills submitted by the doctors where the rate schedule was adhered to.
- (2) Give the doctor the doubt in questionable cases.
- (3) Study the prevailing fees in various communities and be guided thereby in office visit allowances.

The committee desires that all of the doctors keep accurate records of bills rendered and fees received for the next six months, so that there might be concrete evidence as to what headway is being made toward the solution of this difficult problem.

The medical profession of the state is greatly indebted to this committee for its excellent work.

F. WEBB GRIFFITH, M.D.

NEWS NOTES FROM THE BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Dr. W. G. Harrison of Birmingham, Alabama, spent the week of November 23-30 in Winston-Salem, and gave a series of lectures on the History of Medicine at the Bowman Gray School of Medicine. His topics were "Animal Medicine", "Folklore in Medicine", "The Dawn of Medicine in the East", "Early Greek Medicine", and "Classical Greek Medicine". The lectures were open to the public.

* * *

The Bowman Gray School of Medicine was featured at a Wake Forest College Alumni Banquet held in Charlotte on November 29. Addresses were made by Dr. W. S. Rankin of Charlotte, Mr. O. M. Mull of Shelby, Dr. Tinsley R. Harrison, Professor of Medicine at the Bowman Gray School of Medicine, Dr. Howard H. Bradshaw, Professor of Surgery, and Dr. C. C. Carpenter, Dean.

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Dr. George Harrell, Assistant Professor of Medicine, and Dr. John R. Williams, Assistant Professor of Medicine, spoke before a joint meeting of the Staff of the Veterans Administration Facility and the Washington, Carter, and Unicoi County Medical Society at Mountain Home, Tennessee, on November 13. Dr. Harrell spoke on "The Diagnosis of Obscure Fevers", and Dr. Williams on "The Diagnosis of Organic Heart Disease".

* * *

Dr. Wingate M. Johnson, Professor of Clinical Medicine, gave a talk at the Annual Conference of Secretaries of Constituent State Medical Associations, held in Chicago November 14 and 15. His subject was "How Can a State Medical Journal Best Support Organized Medicine?".

* * *

Dr. Robert L. McMillan, Associate Professor of Clinical Medicine, spent ten days during November at the United States Public Health Laboratories at Bethesda, Maryland, studying typhus fever and a new technique of performing the complement fixation test for the American type of "Q" fever. Dr. McMillan was invited to make these studies at Bethesda after he discovered a case of "Q" fever in Winston-Salem, and proposed a new type of cure for it.

* * *

Dr. J. P. Rousseau, Professor of Radiology, gave an address before the annual meeting of the Radiological Society of North America, held in San Francisco December 1-5. The subject of his paper was "The Value of Roentgen Therapy in the Treatment of Pneumonia Which Fails to Respond to Sulfonamide Therapy".

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

An article by Dr. Julian M. Ruffin, Associate Professor of Medicine, entitled "Diagnosis and Treatment of Mild Vitamin Deficiency", appeared as the leading article in the *Journal of the American Medical Association* for November 1.

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Dr. Robert A. Ross, Associate Professor of Obstetrics and Gynecology, gave the main address at the Founders Day Exercises of the Medical College of the State of South Carolina on November 6. His subject was "Medical Organizations and Education in a Neighboring State".

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Dr. William deB. MacNider attended a meeting of the American Philosophical Society in Philadelphia on November 20, 21 and 22.

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The North Carolina Society of Pathologists will hold its annual meeting at the Medical Building in Chapel Hill on the afternoon and evening of December 16.

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The John R. and Mary Markle Foundation has announced the renewal of a grant to Dr. Russell L. Holman, Associate Professor of Pathology in the School of Medicine, for aid in his investigations on "The Effect of Diet and Renal Insufficiency on the Production of Arterial Lesions".

* * *

Dr. Robert Barrett Lawson, of the faculty of the School of Public Health, presented a paper on "The Structure and Clinical Use of Vitamin K" at the meeting of the Elisha Mitchell Scientific Society.

* * *

Dr. Harold W. Brown, Dean of the School of Public Health, was in St. Louis, Missouri, during the week of November 10 attending the meeting of the National Malaria Society, and presented a paper on Recent Researches on Human Malaria. Dr. Brown was elected Vice President of the National Malaria Society.

* * *

Dr. Emanuel Waletsky, of the University of Wisconsin, has been appointed Instructor in Public Health at the University of North Carolina.

NEWS NOTES FROM THE STATE BOARD OF HEALTH

The North Carolina State Board of Health has been awarded a certificate of merit for outstanding health work among Negroes, it was announced here by Dr. Carl V. Reynolds, State Health Officer.

The award was made by the United States Public Health Service and the certificate was signed by Roscoe C. Brown, health education specialist, chairman of the National Negro Health Week Committee.

In a letter received by Dr. Reynolds, it was stated that the award is "a formal acknowledgment of the contribution of your community to the achievement of the current year's National Negro Health Week observance and in recognition of the year-round health consciousness and activity which are essential to effective participation in the various health services of your community."

North Carolina was the first state in the Union whose Board of Health added a full-time Negro physician to its staff for work among Negroes. This post is held by Dr. Walter J. Hughes, whose work among the members of his race has been outstanding and who, in a recent address at Durham, declared that North Carolina has done more to promote the health of the Negro than any other state.

The staff of health workers in North Carolina among Negroes includes one full time physician, a well trained health educator, six dentists, eleven part-time physicians and thirty nurses.

* * *

Dr. Carl V. Reynolds, North Carolina State Health Officer, who also is Vice President of the State and Provincial Health Authorities of North America, is in receipt of a letter from Paul V. McNutt, Federal Security Administrator, notifying him that he has been appointed chairman of the subcommittee on public health under the Procurement and Assign-

ment Agency set up by President Roosevelt. Dr. Reynolds attended the first meeting of this newly-created agency, which was held in Washington on November 26.

The Procurement and Assignment Agency, under which Dr. Reynolds has been appointed to serve in a national capacity, is made up of the following members, who were appointed by the President: Dr. Frank H. Lahey, of Boston, president of the American Medical Association; Dr. James E. Paulin, of Atlanta; Dr. Harvey B. Stone, of Baltimore; Dr. Harold S. Diehl, of Minneapolis, and Dr. C. Willard Camalier, of Washington, D. C.

There are nine subcommittees, one to handle each of the following subjects: Medical education, hospitals, public health, women physicians, information, industrial health and medicine, dentists, veterinary medicine and negro health.

The functions of the new Agency, as outlined to Dr. Reynolds by Administrator McNutt are: (1) to receive from various governmental and other agencies requests for medical, dental and veterinary personnel; (2) to secure and maintain lists of professional personnel available, showing detailed qualifications of such personnel; and (3) to utilize suitable means to stimulate voluntary enrollment, having due regard for the over-all public needs of the nation, including those of governmental agencies and civilian institutions.

* * *

The citizen's responsibility in the matter of law-enforcement was emphasized by Dr. Carl V. Reynolds, State Health Officer, in a statement issued from Raleigh.

"The Governor's warning to law-enforcement officers in North Carolina was outstanding and forceful," he declared. "His appeal is a challenge to the sworn officers of the law throughout the State. Prompt action should be taken, in order to preserve the dignity of the State and make it unnecessary for the federal authorities to take control of a situation which, in truth, is our own responsibility.

"The greater the trust, the greater the responsibility," Dr. Reynolds continued. "When we contemplate that the United States Government has stationed more than 100,000 of its armed forces within the borders of our State—the flower of American young manhood, who need the protection against disease that we can give them—we should pause and consider this responsibility in all seriousness. These young men, taken from good homes, have been sent to North Carolina to prepare themselves for a task that will help to shape the future destiny of the world in which we live. We owe them much. Shall we, through neglect or indifference, fail them in this hour of their sacrifice? When taken from the ranks of civilian life, they were physically fit. Let's see that they are kept so."

Dr. Reynolds said that he had just received from a federal agency an appeal which he wished to place before the citizenship of North Carolina. "I am asked," he said, "to give our people this message:

"Urge your law enforcement agencies to use the means provided by your State laws to track down the vicious illegal business of commercialized prostitution. This is especially important in communities near army camps and navy establishments and in industrial centers where men and women are concentrated for defense work. The cleaning up of prostitution sore spots makes for immediate improvement in health; fewer contacts, fewer infections. Army and civilian authorities agree that unless and until we face the necessity for such action in support of medical and social protective measures, we cannot hope to stamp out venereal diseases in America."

NEWS NOTES FROM THE NORTH CAROLINA TUBERCULOSIS ASSOCIATION

A \$10 check has been sent Rizpah Jones, a student at Elizabeth City State Teachers College, as her award for winning a special prize in the annual college Negro essay contest sponsored each Spring by the National Tuberculosis Association and the North Carolina Tuberculosis Association.

This is the second time in as many years that North Carolina has been honored by a winner in this contest—last year Evelyn Love of Bennett College won first place in the national contest.

* * * *

Buy Christmas Seals

1942 PROGRAM ANNOUNCEMENT SECTION ON PRACTICE OF MEDICINE

We are planning an innovation for next year which should appeal to all members of this section. Instead of the usual twenty-minute papers with formal discussion arranged in advance, preference will be given to short papers of three to five minutes, with spontaneous discussion and questions from the audience. We want these papers to include the very worth-while ideas of diagnosis, treatment and office procedures which doctors in private practice frequently originate but rarely convert into a formal report in conventional style.

One of our practitioners has found a morphine-in-gelatin hypodermic to have great advantages in handling addiction problems. One of the medical students in our state has shown that 0.1 cc. of mixed typhoid vaccine intracutaneously gives the same immune response as the usual 1.0 cc. dose subcutaneously, with virtually no reaction in the way of chills, fever, pain and malaise. These are examples of the practical topics we desire for the program.

This is an opportunity for you to bring some worth-while idea to the attention of your colleagues, without the long labor of preparing a conventional paper, so that others may confirm and utilize your own contribution to medicine. Volunteers are requested to write the section chairman, Dr. O. Norris Smith, Greensboro, as soon as possible.

FOURTH DISTRICT MEDICAL SOCIETY

The Fourth District Medical Society held a dinner meeting in Goldsboro on November 11. Following the dinner, the meeting was called to order by Dr. W. G. Wilson, president. The minutes and treasurer's report were given by Dr. Watson Wharton, secretary-treasurer. Officers elected for 1942 were Dr. L. Jack Harrel, Goldsboro, president; Dr. F. M. Aycock, Princeton, vice president; Dr. Watson Wharton, Smithfield, secretary-treasurer.

After the business meeting Dr. C. C. Dale gave a "Case Report of Primary Tuberculosis Pericarditis".

Guests present were Dr. F. Webb Griffith, Dr. Roscoe D. McMillan, Dr. Earl Brian, and Dr. George Coleman. The next meeting is to be held in Smithfield in February.

SIXTH DISTRICT MEDICAL SOCIETY

Dr. Sidney Smith of Raleigh has been appointed secretary of the Sixth District Medical Society.

DURHAM-ORANGE COUNTY MEDICAL SOCIETY

The Durham-Orange County Medical Society met in Durham on October 10. Dr. Isaac H. Manning, Jr., spoke on "Hyperparathyroidism".

FORSYTH COUNTY MEDICAL SOCIETY

The Forsyth County Medical Society held a dinner meeting in Winston-Salem on November 11. Dr. Clarence Gardner of Duke University spoke on "Newer Trends in Surgery".

GUILFORD COUNTY MEDICAL SOCIETY

The Guilford County Medical Society met at the Sheraton Hotel in High Point on November 6. Dr. L. M. Polvogt, Associate Professor of Otolaryngology at Johns Hopkins Medical School, spoke on deafness. A new audiometer recently purchased by the Greensboro Health Department was demonstrated.

HALIFAX COUNTY MEDICAL SOCIETY

The Halifax County Medical Society held its regular monthly meeting at the Roanoke Rapids Hospital on November 14, with Dr. M. C. Maddrey, president, presiding. Dr. William B. Porter of the Department of Medicine, Medical College of Virginia, presented a paper on "The Metastatic Complications of Staphylococcal Cutaneous Infections".

HARNETT COUNTY MEDICAL SOCIETY

At a meeting of the Harnett County Medical Society on November 3, Captain R. A. Gilreath, president of the Induction Board at Fort Bragg, discussed the causes of rejection found in selectees. Major W. H. Hicks of the Dental Corps discussed the same subject from a dental point of view.

MECKLENBURG COUNTY MEDICAL SOCIETY

The first November meeting of the Mecklenburg County Medical Society was held on November 4. Dr. W. E. Daniel gave a "Urological Case Report", and Dr. A. A. Barron discussed "Lymphocytic Meningitis". On November 14 the Mecklenburg County Medical Society held a joint meeting with the North Carolina Radiological Society. Dr. Ross Golden, Professor of Radiology at Columbia University, was the guest speaker. His subject was "The Diagnosis of Disease of the Small Bowel".

RANDOLPH COUNTY MEDICAL SOCIETY

The Randolph County Medical Society held a general business meeting in November, following a dinner given by Dr. J. L. Fritz.

UNION COUNTY MEDICAL SOCIETY

The Union County Medical Society met on November 10, with a perfect attendance of active members. Dr. F. N. Andrews spoke on "The Black Widow Spider", and Dr. J. W. Ormond gave a paper on "Clinical Medicine and Physiology". Dr. Francis Normer Andrews of Waxhaw was received as an active member of the society.

SURGEONS' COLLEGE APPROVES TRAINING PROGRAMS OF 216 HOSPITALS

Stressing the importance to health defense of intensified effort in training surgeons, Dr. Dallas B. Phenister of Chicago announced on November 3, in Boston at the opening session of the Clinical Congress of the American College of Surgeons, a list of 216 hospitals in the United States and Canada approved by the College for graduate training in surgery. Dr. Phenister is chairman of the committee which is conducting this program. Duke Hospital is, thus far, the only hospital in North Carolina approved for graduate training in surgery.

THE ANNUAL CONFERENCE OF MEDICAL SECRETARIES OF CONSTITUENT STATE MEDICAL ASSOCIATIONS

On November 14 and 15 the annual conference of secretaries of constituent state medical associations was held at the A.M.A. headquarters in Chicago. The non-secretary editors of state medical journals were also invited to participate in this conference, and the after-dinner program on November 14 was devoted to problems of state medical journals.

The conference was devoted chiefly to the medical defense program, but the extension of plans for providing medical service came in for considerable discussion. The high light of the conference was the address by General Lewis B. Hershey, which is published in full in the *Journal of the A. M. A.* for November 29 (pages 1894-7). The other papers are to be published in full or in part in later issues of the *Journal*.

Much interest was taken in the fate of medical students in the draft. General Hershey and others doubted that a law would be passed specifically exempting them, but gave assurance that they would be deferred until after a year's internship, provided that they would join the Medical Administrative Corps Reserve during their last two years in medical school. Upon graduation they will be transferred to the Medical Corps Reserve, to be assigned to active duty if necessary.

OFFICE OF CIVILIAN DEFENSE

Dr. George Baehr, Chief Medical Officer of the Office of Civilian Defense, Washington, D. C., has announced the appointment of a subcommittee of the Advisory Board of the Medical Division, Office of Civilian Defense, to prepare recommendations on protective procedures for hospitals in the event of belligerent action.

Dr. Robin C. Buerki, dean of the Graduate School of Medicine and director of hospitals of the University of Pennsylvania, Philadelphia, a member of the Medical Advisory Board, is chairman of the new subcommittee and the members are:

Dr. Willard C. Rappleye, commissioner of hospitals, New York City.

Dr. Asabel J. Hockett, superintendent of Touro Infirmary, New Orleans.

Dr. Anthony J. J. Rourke, medical superintendent of Stanford University Hospitals, San Francisco.

Dr. Joseph Turner, director of Mount Sinai Hospital, New York City.

Dr. Huntington Williams, commissioner of health of Baltimore.

UROLOGY AWARD

The American Urological Association offers an annual award 'not to exceed \$500.00' for an essay (or essays) on the result of some specific clinical or laboratory research in urology. The amount of the prize is based on the merits of the work presented, and if the Committee on Scientific Research deem none of the offerings worthy, no award will be made. Competitors shall be limited to residents in urology in recognized hospitals and to urologists who have been in such specific practice for not more than five years.

Essays shall be in the hands of the Secretary, Dr. Clyde L. Deming, 789 Howard Avenue, New Haven, Conn., on or before April 1, 1942.

AMERICAN MEDICAL ASSOCIATION BROADCASTS

Doctors at Work, the dramatized radio program broadcast by the American Medical Association and the National Broadcasting Company will go on the air for its second season beginning December 6, 1941, from 5:30 to 6:00 p. m., Eastern Standard time. The program will be broadcast on upwards of seventy-five stations affiliated with the Red Network of the National Broadcasting Company and will be heard from coast to coast.

The new series of broadcasts will resume where last year's story left off, namely, with the marriage of Tom Riggs and Alice Adams, and the life of a young doctor and his wife in time of National Emergency in a typical, medium-sized, American City.

The program will be produced under the supervision of the Bureau of Health Education, of the American Medical Association, W. W. Bauer, M.D., Director.

The program will be available to all stations affiliated with the Red Network of the National Broadcasting Company. Announcements should be sought in local newspaper radio columns under the title "Doctors at Work" or possibly "American Medical Association" or in some instances, "Health Broadcasts." Evidence of local interest in the program may be the determining factor in whether a local station takes this educational, sustaining feature or sells its time to a local, revenue producing program.

EXAMINATIONS

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The written examination and review of case histories (Part I) for Group B candidates will be held in the various cities of the United States and Canada, on Saturday, January 3, 1942, at 2:00 p. m. Formal notice of the place of examination will be sent each candidate several weeks in advance of the examination date. No candidate will be admitted to examination whose examination fee has not been paid at the Secretary's Office. Candidates who successfully complete the Part I examination will proceed automatically to the Part II examination held in June, 1942.

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the entire Board, meeting at Atlantic City, N. J., in June, 1942, immediately prior to the annual meeting of the American Medical Association.

Application for admission to Group A, Part II, examinations must be on file in the Secretary's Office not later than March 1, 1942.

As previously announced in the Board booklet, this fiscal year (1941-1942) of the Board marks the close of the two groups of classification of applicants for examination. Thereafter, the Board will have only one classification of candidates, and all will be required to take the Part I examinations.

For further information and application blanks, address Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania.

FELLOWSHIPS IN NUTRITION RESEARCH

Scientific attack on problems of the American diet was furthered with the announcement by Charles H. Swift, chairman of the board of directors of Swift & Company of the establishment of a series of fellowships for research in nutrition. The fellowships are intended to aid the federal government in its long-range national nutrition program.

The fellowships provide for special research to be undertaken in laboratories of universities and medical schools with funds which the company has set aside as grants in aid, beginning November 1. The fellowships will be for one year but may be renewed where the project warrants it.

Any fundamental study of the nutritive properties of foods or the application of such information to improvement of the American diet and health will be eligible for consideration for a grant, according to Dr. R. C. Newton, vice-president in charge of the company's research laboratories, who will coordinate the program.

NEWS NOTES

Dr. Paul H. Ringer of Asheville gave as his President's Address before the Southern Medical Association, meeting in St. Louis, Missouri, November 10-13, a paper on "Giants of Yesterday". Others appearing on the program from North Carolina were: Drs. Roger D. Baker, J. Lamar Callaway, Bayard Carter, William M. Coppridge, Watt Eagle, E. C. Hamblen, Frederic M. Hanes, Angus McBryde, William Nicholson, Edward S. Orgain, R. Beverly Raney, Robert J. Reeves, Julian M. Ruffin, William Schulze, Barnes Woodhall, and Miss Mary A. Poston of Durham; Drs. Fred K. Garvey, George Harrell, and William L. Kirby of Winston-Salem; Drs. Oscar L. Miller and William M. Scruggs of Charlotte; Drs. Edwin J. Chapman and C. C. Swann of Asheville; Dr. Carl V. Reynolds of Raleigh; and Dr. William M. Roberts of Gastonia.

Among the Scientific Exhibits were those of Dr. William Allan, of the Bowman Gray School of Medicine of Wake Forest College, and Dr. Addison G. Brenizer of Charlotte. Dr. Allan's exhibit was on "The Prevention of Hereditary Defects That Wreck Childhood", and Dr. Brenizer exhibited "The Last Method of Ureteral Transplantation: Evolution of Ureteral Transplantation".

* * *

Dr. William M. Coppridge, Durham, has been appointed a member of the Council of the Southern Medical Association from North Carolina for a regular Council term of five years, the appointment having been announced recently by the President, Dr. M. Pinson Neal, Columbia, Missouri. Dr. Coppridge succeeds Dr. Hamilton W. McKay, Charlotte, who, having served the Constitutional limit, was not eligible for reappointment.

* * *

Dr. Herman Max Schiebel of Durham was married to Miss Barbara Fish of New York City on October 7.

* * *

Dr. Francis Normer Andrews, formerly of Bluefield, West Virginia, has located at Waxhaw, North Carolina, for the general practice of medicine.

* * *

Dr. Harold C. McDowell has announced the opening of offices in the Reynolds Building, Winston-Salem, for the practice of orthopedics and reconstruction surgery.

Dr. Robert R. Garvey and Dr. Fred K. Garvey, Winston-Salem, have announced the association of Dr. Charles M. Norfleet, Jr., with them in the practice of urology.

* * *

Dr. C. P. Anderson has left the Durham County Health Department to go to Gary, Indiana.

* * *

Dr. J. E. Osborne of Rosman has been assigned to submarine service as a Lieutenant Commander.

* * *

The following North Carolina physicians were registered at the St. Louis meeting of the Southern Medical Association.

Baker, Roger D., Durham.
 Brewer, J. Street, Roseboro.
 Bridges, D. T., Lattimore.
 Brookshire, Harley G., Jr., Asheville.
 Brown, Harold W., Chapel Hill.
 Callaway, J. Lamar, Durham.
 Carter, Bayard, Durham.
 Chapman, E. J., Asheville.
 Cooley, S. S., Black Mountain.
 Coppridge, Wm. M., Durham.
 Eagle, Watt W., Durham.
 Edwards, Forrest D., Lawndale.
 Farrington, R. K., Thomasville.
 Flagge, P. W., High Point.
 Fox, R. E., Raleigh.
 Garvey, Fred K., Winston-Salem.
 Grantham, W. L., Asheville.
 Griffin, M. A., Asheville.
 Hamblen, E. C., Durham.
 Harrell, Geo. T., Winston-Salem.
 Holmes, George W., Winston-Salem.
 Jennings, R. G., Thomasville.
 Kendrick, John F., Raleigh.
 Kirby, W. L., Winston-Salem.
 Lackey, M. A., High Point.
 Lackey, W. J., Fallston.
 Lott, Wm. C., Asheville.
 McBryde, Angus M., Durham.
 McGuire, B. B., Newland.
 McKay, Hamilton W., Charlotte.
 McNeill, James H., North Wilkesboro.
 Mitchell, Z. P., Shelby.
 Moore, Roy H., Canton.
 Northington, Jas. M., Charlotte.
 Orgain, Edward S., Durham.
 Parks, W. Craig, High Point.
 Proctor, Ivan M., Jr., Raleigh.
 Raney, Richard Beverly, Durham.
 Ringer, Paul H., Asheville.
 Roberts, William M., Gastonia.
 Ross, R. A., Durham.
 Ruffin, Julian M., Durham.
 Schulze, William, Durham.
 Smith, J. A., Lexington.
 Sprunt, Douglas H., Durham.
 Sumner, E. A., High Point.
 Swann, C. C., Asheville.
 Vestal, T. F., Raleigh.
 White, R. A., Asheville.
 Woodhall, M. Barnes, Durham.

AUXILIARY

AUXILIARY EXPANSION

The expansion program of the State Auxiliary is bearing satisfactory results. Mecklenburg County was proudly welcomed into the State organization on October 29, when the Auxiliary to the Mecklenburg County Medical Society held an organization luncheon, attended by forty members. Arrangements were made under the direction of Mrs. G. Aubrey Hawes of Charlotte, the capable Councilor of the Seventh District, who is responsible for effecting the organization of this auxiliary.

Officers of the Mecklenburg County Auxiliary are Mrs. Raymond Thompson of Charlotte, President; Mrs. Charles Gay of Charlotte, Treasurer; and Mrs. Graham Reid of Charlotte, Secretary.

The State Auxiliary President, Mrs. Sidney Smith of Raleigh, is accepting as many invitations as possible to visit county and district meetings, especially when new county groups are in the process of being organized. She was in Fayetteville on October 23 to attend the meeting of the Fifth District as guest of Mrs. William T. Rainey, Councilor of this district. The district doctors' wives and a number of visiting wives from Fort Bragg displayed keen interest in the aims and purposes of the Auxiliary, discussed during the afternoon. As a result plans are under way for the organization of a Cumberland County Auxiliary and other county auxiliaries in the Fifth District. The Fayetteville doctors' wives entertained at a beautiful tea following the meeting.

Mrs. Smith went to Gastonia on November 5 to attend the meeting of the Seventh District Auxiliary, of which Mrs. James O. Nolan is president. She was on the program with Mrs. G. Aubrey Hawes, Councilor of the Seventh District, Mrs. Joseph A. Elliott of Charlotte, State Program Chairman, and Dr. John Elliott of Salisbury, who spoke on blood plasma and blood banks. In addition to the formation of an auxiliary in Mecklenburg County, this district reported that organization is in progress in Gaston and Cleveland Counties.

The Third District Councilor, Mrs. D. M. Royal of Salenburgh, entertained representatives from each of the counties in her district at luncheon at her home on November 18, with Mrs. Smith and Mrs. P. P. McCain of

Sanatorium, Chairman of Past Presidents, as honor guests. Mrs. McCain gave interesting highlights in the history of the Auxiliary and Mrs. Smith spoke on the place of the Auxiliary in the modern realm of medical science.

The State President will be the guest of the Guilford County Auxiliary at luncheon at the home of Mrs. Wesley Taylor in Greensboro on December 19. Mrs. Edward T. Harrison of High Point is Councilor of the Eighth District, which embraces the strong Forsyth and Guilford County Auxiliaries.

The Craven County Auxiliary held an enthusiastic meeting on October 29 in New Bern, when five new members were enrolled and a \$25.00 contribution was sent to support the two beds in the tubercular sanatoriums at Black Mountain and Sanatorium. Ten dollars of this amount was contributed to this fund by the New Bern Nurses' Association. Mrs. C. S. Barker of New Bern is president of the Craven County Auxiliary. Guests at the meeting were Mrs. K. B. Pace of Greenville, Councilor of the Second District, and Mrs. T. Leslie Lee of Kinston, Chairman for National Defense.

The Forsyth County Auxiliary has held its first fall meeting, and will meet again in December, reports Mrs. Robert L. McMillan of Winston-Salem, president. The Robeson County Auxiliary met in October at the call of the president, Mrs. H. T. Pope of Lumberton. The Wake County Auxiliary, of which Mrs. A. C. Campbell is president, is having very successful monthly luncheon meetings, visiting the various towns in the county. The September meeting was held in Raleigh, and in October the Wake County doctors' wives were entertained at the American Legion Hut in Fuquay-Varina. The December meeting will be held in Wendell. Wake County devotes some of its meetings to planned programs on medical subjects, others to discussion of Auxiliary activities.

MRS. VERNE S. CAVINESS,
Press and Publicity Chairman.

THE MCCAIN-STEVENSONS BED FUND

"To organize, to raise more money, to do more good" should be the aim of every doctor's wife in the State of North Carolina. If everyone could see the good that has been accomplished by the bed fund, perhaps she would be inspired and willing to devote time and effort to this worthwhile project.

In 1928 the Auxiliary took a bed at the North Carolina Sanatorium, which they supported as an annual project until 1934. In this year Mrs. R. S. McGeachy made a motion that we make this bed a permanent project and call it the McCain Bed. Since that time fourteen doctors, members of doctors' families, nurses, children and others have been our guests in this bed, and we have been allowed to share in their fight to regain their health.

In 1940 the Auxiliary took a bed at the Western Sanatorium, which was named the Stevens Bed. There has been only one patient in this newer bed, Dr. W. G. Byerly of Lenoir, who is our guest at the present time. We now have another doctor in the McCain Bed, Dr. Meredith Johnson.

In 1935 Mrs. J. Buren Sidbury started an endowment fund for our beds, and on May 18, 1941, our treasurer reported that a total of \$2,024.51 has been raised toward our \$10,000 goal. This is a real challenge to every person in the state interested in medicine—to raise this money in order that our beds may be assured.

In the ten years from 1929 until 1939 the Auxiliary paid to the Sanatorium \$2,385.88. Did you and your county share in this? A small amount of your time spent in raising money for our beds may insure a large amount of some sick person's time for getting well.

It is not long until Christmas. Make a note right now to remember our guests during the holiday season—and through the new year.

MRS. J. R. TERRY,
State Chairman of McCain-Stevens Bed Fund.

In Memoriam

Robert Randolph Jones, Jr., M.D., of Durham, aged 39, was fatally shot by a deranged patient on November 18, 1941. Dr. Jones was widely known for his work in plastic surgery. He was a graduate of the Johns Hopkins University School of Medicine in 1928; Assistant Professor of Surgery at Duke University School of Medicine and Assistant Surgeon, Duke Hospital, Durham; Director of the Duke Tumor Clinic; Director of Education of the North Carolina Division of the Women's Field Army for the Control of Cancer; Fellow of the American College of Surgeons; Licentiate of the American Board of Surgery; Member of Phi Beta Kappa, Alpha Omega Alpha, and Alpha Kappa Kappa.

In 1929 Doctor Jones married Virginia Murray. His wife, one son—Randolph, III, aged 7—his father, mother, and two brothers, John B. Jones, of El Paso, Texas, and Dr. Thomas T. Jones, of Durham, survive.

BOOK REVIEWS

Gynecology and Female Endocrinology. By Emil Novak, A.G., M.D., D.Sc. (Hon. Dublin), F.A.C.S., Associate in Gynecology, The Johns Hopkins Medical School. Price, \$10.00. Boston: Little, Brown and Co., 1941.

Gynecology, until recent years, was merely an adjunct of surgery. It might well have been defined as the surgery of the female pelvis. The recent developments in endocrinology have, however, placed at the gynecologist's disposal a number of facts as a scientific basis for his subject, as well as numerous therapeutic agents with which to treat his patients. It is with this broadened outlook on the subject that Novak has written the present volume. The combination of gynecology and female endocrinology requires no apology, and in fact seems to the reviewer to be the *sine qua non* of any adequate presentation of the subject. Not only will the gynecologist find the book of value but the general practitioner will also be helped in understanding and treating the many gynecologic disorders encountered in daily practice. Unlike the several excellent monographs on gynecologic endocrinology which have appeared in recent years, the present volume includes the general aspects of gynecology (exclusive of operative technique) found in the usual text on the subject.

Physical Diagnosis. By William Nance Anderson, M.D., Associate Clinical Professor of Medicine in the University of Southern California School of Medicine. 424 pages, with 92 illustrations. Price, \$4.75. Philadelphia: Lea and Febiger, 1940.

This book is primarily intended for the medical student beginning the study of physical diagnosis. It includes a discussion of (1) the fundamental principles of palpation, percussion and auscultation, (2) the methods of examination in general use, and (3) a description of the characteristic symptoms and signs of important diseases of the heart, lungs and abdominal viscera. The book is written in a clear and lucid style and should prove of value not only to the student but to the general practitioner desirous of refreshing his knowledge of the principles of physical diagnosis.

Symptoms in Diagnosis. By Jonathan Meakins, M.D., LL.D., Professor of Medicine and Director of the Department of Medicine, McGill University; Physician-in-Chief, Royal Victoria Hospital, Montreal; Formerly Professor of Therapeutics and Clinical Medicine, University of Edinburgh. 323 pages, illustrated. Price \$4.00. Boston: Little, Brown and Company, 1941.

Dr. Meakins' long training as a clinician and a teacher has well qualified him to evaluate the relative importance of symptoms in the study of disease. As he says in his preface, "Symptoms are the patient's way of telling his story." The symptoms usually encountered are enumerated and their probable causes named. Particular attention is paid to disturbances of sensation. The brevity of the book is a welcome change from some of the more ponderous volumes that often show evidence of unnecessary padding. It should prove stimulating and helpful to students and practitioners alike.

Approved Laboratory Technic. Clinical, Pathological, Bacteriological, Mycological, Parasitological, Serological, Biochemical and Histological. By John A. Kolmer, Professor of Medicine, Temple University; and Fred Boerner, Assistant Professor of Bacteriology, School of Medicine and Graduate School of Medicine, University of Pennsylvania. Ed. 3. Price, \$8.00. New York: Appleton-Century Company, 1941.

This new edition of a well-known text has been brought up to date by the addition of approved procedures recently introduced into medicine. The book is complete and authoritative, the authors having been assisted by a group of collaborators prominent in various fields of clinical pathology. All laboratory procedures usually called upon in clinical diagnosis are described in detail and their significance is indicated.

Laboratory methods are generally acknowledged to be an important part of modern medical practice. Unfortunately, the various procedures employed lose their unique and principal value—objectivity—by being performed too often by technicians instead of by the physician himself. The routine nature of such procedures, particularly when they are inexpertly supervised, frequently results in poorly done work. This, rather than any inherent inadequacy of laboratory methods, is responsible for any deficiency which these procedures may show when applied to medical practice. The practitioner, as well as the student of medicine, will profit by giving greater attention to this oft neglected part of his subject, and the present volume can be recommended for this purpose.

The Principal Nervous Pathways. Neurological charts and schemas with explanatory notes. By Andrew Theodore Rasmussen, Ph.D., Professor of Neurology, Department of Anatomy, University of Minnesota Medical School, Minneapolis, Minn. 73 pages, with 28 full page figures. Price, \$2.50. New York: The Macmillan Company, 1941.

The author presents a completely revised edition of a book which has long been known to teachers and medical students as a most concise and complete representation of the principal nervous pathways. The main paths of the spinal cord are presented, and also the tracts and divisions of the nervous system associated with the special senses such as optic, olfactory, auditory, gustatory and the equilibratory system.

Each system is treated separately and the material is presented by three methods: diagram, word description and outline.

Of special interest in this edition is the inclusion of recent information on the subdivision and functional localization in the thalamus. Also included are the results of a study made by serial sections of cords removed from individuals on whom lateral chordotomy had been performed. Such information has resulted in a more accurate placement of the lateral spinothalamic tract (pain and temperature conduction) and suggests the feasibility of surgical interruption of this path at higher levels—that is, at the pons and midbrain.

This book is to be recommended not only to students and teachers but to practitioners as well, because of its compact presentation.

The Care of the Aged. By Malford W. Thewlis, M.D., Attending Specialist, General Medicine, United States Public Health Hospitals, New York City; Attending Physician, South County Hospital, Wakefield, R. I.; Special Consultant, Rhode Island Department of Public Health. Third Edition, entirely rewritten. 579 pages. Price, \$6.00. St. Louis: The C. V. Mosby Company, 1941.

Whether we like it or not, the proportion of older people in our population is bound to show a steady increase. Consequently the ailments peculiar to old age must necessarily assume greater importance, especially to the general practitioner and the internist. After devoting a quarter of a century to the subject, Dr. Thewlis is admirably qualified to discuss the problems of old age, and does so from the viewpoint of a sympathetic friend and counselor.

The work is divided into five sections: (1) general considerations; (2) miscellaneous medical problems; (3) specific infections; (4) non-infectious diseases; and (5) pathologic conditions in old age. These are all given properly balanced consideration. Throughout the whole book there is evident the author's good common sense. The style is clear, and altogether the book can be heartily commended to all medical men, but especially to general practitioners and internists.

Rheumatic Fever in New Haven. Edited by John R. Paul, M.D., Professor of Preventive Medicine, Yale University School of Medicine. 176 pages. Price \$1.00. Paper binding. Lancaster, Pennsylvania: The Science Press Printing Company, 1941. Distributed by the Milbank Memorial Fund, 40 Wall Street, New York City.

This little volume gives an excellent summary of a twelve year study made possible by grants from the Milbank Memorial Fund. Rheumatic fever in New Haven was studied from a number of angles, such as epidemiology, prevalence, age-incidence, living conditions, economic status and heredity. While no startlingly original conclusions were reached, the study was thorough and the findings valuable. Among the results of the study were the findings that active rheumatic cases made up 1.2 and the inactive rheumatic heart cases made up 1.5 per cent of admissions to New Haven hospitals; that the disease was most prevalent from 5 to 24 years of age; that upper respiratory infections were often followed within ten to twenty-one days by rheumatic fever; and that rheumatic fever was from 1.5 to 2 times more frequent among the poorer classes than among well-to-do, although curiously those with moderate incomes had a slightly higher incidence than the poor or very poor. Crowded living conditions seemed to favor its greater frequency, as did wet or damp surroundings. Heredity was shown to play a definite part.

The Danger of Overenthusiasm.—With the great advances that are being made in medicine, it is necessary to preserve an open mind and to change our ideas frequently, but we must never be carried away by overenthusiasm or accept things without adequate evidence. When we do not know, we should say so and enlist the aid of people who do. With increasing knowledge and experience one will, if he is stable, acquire good judgment and will be able to tell when a procedure appears to offer some promise and when it does not. A good physician considers only the welfare of his patient and will subject him only to those therapeutic and operative procedures which will help him.—Willard O. Thompson: *Common Sense in the Practice of Medicine*, Illinois M. J. 80:369 (November) 1941.

Squibb Now Packages Diphtheria Toxoids According to New Recommended Dosages

Following the recommendation of the Committee on Administrative Practice of the American Public Health Association of two doses of diphtheria toxoid alum precipitated, or three doses of diphtheria toxoid, for immunization against diphtheria, E. R. Squibb & Sons, New York, are now supplying Diphtheria Toxoid Alum Precipitated Squibb in two-dose packages and Diphtheria Toxoid (Ramon) Squibb in three-dose packages.

The new recommended dosages are the outgrowth of comprehensive studies which have shown conclusively that a higher percentage of children receiving 2 x 1 cc. doses of diphtheria toxoid alum precipitated, or three doses of diphtheria toxoid, will be subsequently Shick-negative, than those children to whom only 1 cc. of diphtheria toxoid alum precipitated or 2 x 1 cc. of diphtheria toxoid—the heretofore commonly used dosages—is administered.

Squibb diphtheria toxoids are now packaged as follows:

Diphtheria Toxoid Squibb (Anatoxin Ramon):
3 x 1 cc. vials, — (one complete immunization)
30 cc. vial — (ten complete immunizations)
1 cc. vial for reaction test.

Diphtheria Toxoid Alum Precipitated Refined Squibb:
2 x 1 cc. vials, — (one complete immunization)
2 x ½ cc. vials, — (one complete immunization)
10 cc. vial — (five complete immunizations)
5 cc. vial — (five complete immunizations)

Why Mead Johnson and Company Cooperates With the Council

Voluntarily, we market only Council-Accepted products because we have faith in the principles for which the Council on Pharmacy and Chemistry (and the Council on Foods) stand.

We have witnessed the three decades during which the Council has brought order out of chaos in the pharmaceutical field. For over thirty years it has stood—alone and unafraid—between the medical profession and unprincipled makers of proprietary preparations.

The Council verifies the composition and analysis of products, and substantiates the claims of manufacturers. By standardizing nomenclature and disapproving therapeutically suggestive trade names, it discourages shotgun therapy and self-medication. It is the only body representing the medical profession that checks inaccurate and unwarranted claims on circulars and advertising as well as on packages and labels.

To supplement their line of products for use in the treatment of anemia, E. R. Squibb & Sons, New York, have introduced Capsules Ferrous Sulfate with B₁. Each capsule contains 3 grains ferrous sulfate exsiccated (approximately 60 mg. iron) together with 1 mg. pure crystalline thiamine hydrochloride (333 U. S. P. XI units vitamin B₁).

Capsules Ferrous Sulfate with B₁ Squibb are designed for oral administration in the prophylaxis and treatment of secondary anemia, especially where the addition of vitamin B₁ is considered desirable, as during pregnancy and lactation, infancy and childhood, and in patients with anorexia associated with thiamine lack. They may also be useful as a supplement to liver therapy in the treatment of pernicious anemia when an iron deficiency also exists.

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